SERVICE MANUAL

MODEL 1084P MONITOR

includes 1084P-S SCHEMATIC

JULY, 1988

PN-314890-01

commodore
COMPUTERS

SERVICE MANUAL

MODEL 1084P MONITOR

includes 1084P-S SCHEMATIC

JULY, 1988 **PN-314890-01**

Commodore Business Machines, Inc.
1200 Wilson Drive, West Chester, Pennsylvania 19380 U.S.A.

IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all NAPCEC Equipment. The service procedures recommended by NAPCEC and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. NAPCEC could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, NAPCEC has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by NAPCEC must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

WARNING

Critical components having special safety characteristics are identified with an S by the Ref. No. in the parts list and enclosed within a broken line* along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from the N.A.P. Consumer Electronics Corp. NAPCEC assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

* Broken line: ▬ • ▬ • ▬ • ▬ •

INDEX

SPECIFICATIONS

CRT size	13 inch diagonal
CRT Deflection Angle	90 degrees
CRT Mask Pitch:	
-8CM505/CM8505/CM8705	0.65mm
-8CM515/8CM542/CM8562/CM8762	0.42mm
-8CM643	0.39mm
CRT Light Transmission:	
-CM8505/CM8705	56%
-8CM505/8CM515/8CM643	46%
-8CM542/CM8562/CM8762	46%
Power Requirements	115Vac/60Hz
Power Consumption	75W max.
Degaussing	Automatic (when switching on set)
Video Input Signals:	
CM8505/CM8705/8CM505/8CM515/8CM643	RGB anolog 0.7, composite sync, 6 pin connector
Composite video	1Vp-p, negative sync, RCA connector
	RGB-1 TTL, separate horiz. and vert. sync, 8 pin connector
Horizontal Scanning Frequency	15734Hz
Horizontal Frequency Drift	1 % max.
Horizontal Flyback Time	12uS max.
Horizontal Blanking Time	12uS max.
Vertical Scanning Frequency	47-62.5Hz
Vertical Frequency Drift	1% max.
Vertical Flyback Time	0.95mS max.
Vertical Blanking Time	(21H) 1.33mS
RGB Amp Bandwidth	8MHz min.
RGB Amp Bandwidth (8CM643)	15MHz min.
Resolution:	
-Vertical	240 lines
-CM8505/CM8705 Horizontal	390 dots
-8CM505 Horizontal	390 dots
-8CM515/CM8562 Horizontal	640 dots
-8CM542/8CM643	690 dots
Character Display:	
-CM8505/CM8705	1000 characters (40 x 25)
-8CM505	1600 characters (64 x 25)
-8CM515/8CM542/CM8562/CM8762/8CM643	2000 characters (80 x 25)
Overshoot/Undershoot	5% max.
Black Level Shift	3% max.
Audio Input Signal	150mV eff.
Audio Input Impedance	10k
Audio Output Power	1W a 5% distortion
Audio Frequency Range	300Hz - 7kHz
Audio S/N Ratio	40dB min.
Operating Humidity Range	less than 80%
Dimensions (HxWxD)	320x350x387mm

* Specifications subject to change without notice.

ADJUSTMENT PROCEDURES

Adjustment Notes:
unless otherwise specified:

1. An isolation transformer must be used when servicing this unit.
2. Line voltage maintained at 120Vac, 60Hz.
3. The unit should be allowed to warm up for at least 30 minutes prior to making any adjustments.
4. Voltages measured with repect to ground.
5. Signal injection point is the Video In Jack.

R496 Pincushion Adjustment (8CM643 only)

1. Inject a cross-hatch pattern and set Brightness Control (R598) and Contract Control (R585) to their mechanical centers.
2. Adjust R496 so that 14 blocks correspond to a width of 26cm.
3. Horizontal Amplitude and Centering Adjustment
4. Vertical Amplitude and Centering Adjustment

R598 Sub-Brightness Control Adjustment (8CM643 only)
(Dual Trace Oscilloscope required)

1. Inject a signal with a white raster to input connector.
2. Adjust G2 (R727) and Contrast Control to minimum. Adjust Brightness Control to mechanical center.
3. Connect a DC coupled probe from Channel A of the oscilloscope to pin 1 of IC502.
4. Connect a DC coupled probe from Channel B of the oscilloscope to the emitter of TS641.
5. Adjust the Sub-Brightness (R598) to place the top of the video Signal (Channel A) at the same voltage level as the emitter of TS641 (Channel B).
6. Adjust Red (R705), Green (R705) and Blue (R706) cut off controls to set pins 6, 8, and 11 of Picture Tube at 100 volts each.
7. Advance G2 control (R727) until screen just begins to illuminate.
8. If the electron guns of the CRT are balanced, you should get a dull gray raster. However, if one color is more predominant than the others, adjust the cut-off controls of other 2 corresponding guns as required to obtain a gray raster.

Power Supply Adjustment

1. With the unit off, set the Volume Control (R316), Contrast Control (R585), and Brightness Control (R589) to minimum.
2. Preset R114 to mechanical center.
3. Connect a voltmeter across C494 and turn on the unit.
4. Adjust R114 for a reading of 125V on the meter.

Horizontal Synchronization Adjustment

1. Inject a cross-hatch pattern signal and short C434.
2. Adjust the horizontal sync with R437.
3. Remove the short from C434.

Vertical Synchronization Adjustment

1. Inject a cross-hatch pattern signal and short C434.
2. Adjust the vertical sync with R331.
3. Remove the short C434.

Horizontal Amplitude and Centering Adjustment

1. Inject a cross-hatch pattern signal and set the Brightness Control (R589) and Contrast Control (R585) to their mechanical centers.
2. Adjust R485 so that 14 blocks correspond to a width of 26cm.
3. Adjust R453 to center display horizontally.

Vertical Amplitude and Centering Adjustment

1. Inject a cross-hatch pattern and set the Brightness Control (R585) to their mechanical centers.
2. Adjust R353 so that 10 blocks correspond to a height of 18.5cm.
3. Adjust R364 to center the display vertically.

Chrominance Adjustment
(Note: pin nos. in parenthesis indicate alternate 16-pin IC.)

1. Inject a color bar pattern signal and adjust the secondary controls for normal viewing. Place SK3 (not used in CM8562, CM8762, 8CM542) in the off position.
2. Connect an oscilloscope to pin 15 of IC502 and adjust S533 for minimum amplitude of the chrominance signal that is presrnt on the various brightness steps of the luminance signal.
3. Short pins 9 (3) and 17 (11) of IC501.
4. Adjust C567 to minimize the chroma as visible on the screen.
5. Remove the shorting clips from pins.

Comb Filter Adjustment (CM8505/CM8705/8CM505/8CM515/8CM643 ONLY)

1. Inject a color bar pattern signal and place the Comb Filter Switch (SK3 in the on position).
2. Connect an oscilloscope to the emitter of TS531 and adjust R523 and S515 for minimum amplitude of the chrominance signal. For optimum performance, repeat the adjustment.

Focus Adjustment

1. Inject a cross-hatch pattern signal and set the Brightness Control (R589) to minimum and the Contrast control (R585) to maximum.
2. Adjust R732 for optimum focus.

X-Ray Protection Circuit Adjustment

1. Inject a color bar pattern signal and set the Brightness and Contrast Controls to minimum.
2. Connect a voltmeter between the wiper of R457 and ground.
3. Adjust R457 for a reading of 6.9V.

Note: The following adjustments need only be performed if the CRT has been replaced. Minor corrections for purity and convergence may be accomplished through the use of the Purity and Convergence Assembly located on the neck of the CRT.

Color Purity Adjustment (Refer to Figure 1)

1. Loosen the yoke clamp screw and slide the yoke back away from the rubber wedges.
2. Remove the rubber wedges (G) and slide the yoke forward until it rests firmly against the bell of the CRT.
3. Tighten the yoke clamp screw slightly so that the yoke can still be moved with some friction.
4. Place the multi-pole Purity and Convergence Assembly in the position shown in Figure 1.
5. Tighten screw (A) and turn securing ring (B) counter-clockwise. Position the unit so that it faces in an East/West direction and degauss the instrument.
6. Turn on the power and inject a cross-hatch pattern signal. Allow a 10 minute warm-up period.
7. Roughly adjust the static convergence, using tabs C and D.
8. Set the Vertical Centering Control (R364) to its mechanical center. Disconnect R723 and R724 to turn off the green and blue guns.

ADJUSTMENT PROCEDURES (Continued)

9. Adjust the two-pole purity rings (E) to center the red vertical and horizontal lines.
10. Inject a white pattern signal and move the deflection yoke to obtain a full red raster.
11. Turn on the green and blue guns by reconnecting R723 and R724. If a uniformly white raster does not appear, minor adjustments may be made by adjusting the purity rings (E).
12. Inject a cross-hatch pattern signal to ensure that the yoke is not tilted. If necessary, rotate the yoke to obtain a level raster.
13. Tighten screw F and adjust R364 for proper vertical centering. Proceed to the Static Convergence Adjustment.

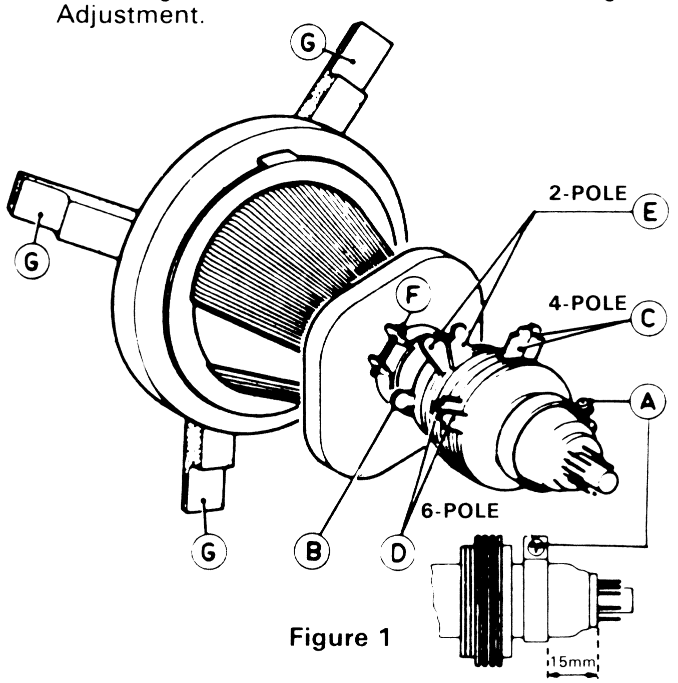


Figure 1

Static Convergence Adjustment

1. Inject a crosshatch pattern signal and allow a 10 minute warm-up period.
2. Turn off the green gun by disconnecting R723. Turn locking ring (B) counterclockwise.
3. Slowly spread, and if necessary, rotate the 4-pole magnetic rings (C) to converge red and blue lines at the center of the screen.
4. Reconnect R723 to turn on the green gun and disconnect R724 to turn off the blue gun.
5. Slowly spread, and if necessary, rotate the 6-pole magnetic rings (D) to converge the red and green lines at the center of the screen.
6. Reconnect R724 to turn on the blue gun.
7. For optimum performance, repeat steps 1 through 6. Proceed to the Dynamic Convergence Adjustment.

Dynamic Convergence Adjustment

1. Inject a cross-hatch pattern signal and turn off the green gun by disconnecting R723.
2. Tilt the yoke up and down to acheive the best convergence of the red and blue vertical lines at the 6 and 12 o'clock and the red and blue horizontal lines at the 3 and 9 o'clock positions (see Figure 2).
3. When the correct position has been found, place a rubber wedge between the CRT. If the yoke is tilted up, place wedge 1 as shown in Figure 3a; if it is tilted down, place wedge 1 as shown in Figure 4a.
4. Tilt the yoke to the left and right to find the point of best possible convergence of the red and blue lines at the edges, top, and bottom of the screen as shown in Figure 5.
5. When the correct position is located, place wedges 2 and 3 as shown in Figure 3b or 4b.
6. Remove wedge 1 and place it in the final position as shown in Figure 3c or 4c. Reconnect resistor R723 to turn on the green gun.

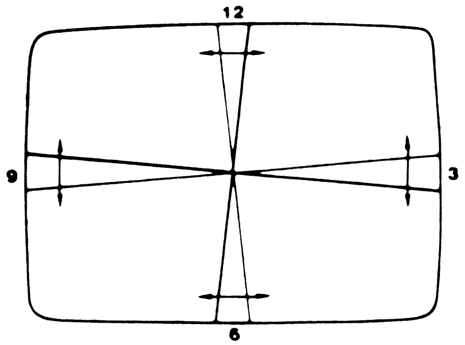


Figure 2 — Tilt yoke up or down to converge Red and Blue vertical lines at 6 and 12 o'clock positions, and Blue horizontal lines at 3 and 9 o'clock positions.

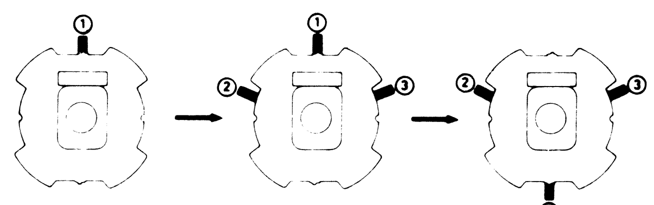


Figure 3a Figure 3b Figure 3c

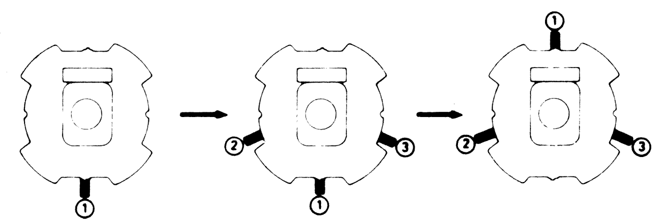


Figure 4a Figure 4b Figure 4c

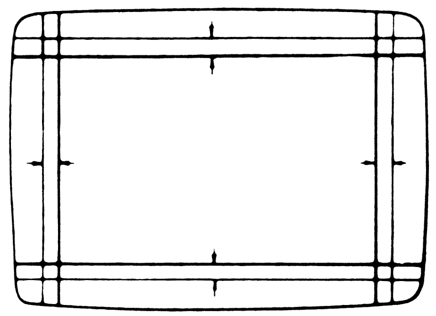


Figure 5 - Tilt yoke left or right to converge Red and Blue horizontal lines at the 6 and 12 o'clock positions, and Red and Blue vertical lines at the 3 and 9 o'clock positions.

Note: A computer delivering RGB TTL output (IBM or Apple) should be used to properly test the RGB circuitry. However, if a computer is not available, the following procedure may be used.
EXCEPTION: CM8562/CM8762/8CM542 does not accept Analog RGB or X-RGB signals.

ADJUSTMENT PROCEDURES (Continued)

RGB INTERFACE P.C. BOARD CHECKS FOR ALL MODELS (Except CM8562/CM8762/8CM542)

Late Production RGB Interface models are IBM Compatible only after Feb. 87.
Early Production models accept Apple (X-RGB) or IBM (RGB-1) prior to Feb. 2, 1987.

The purpose of this board is to accept RGB TTL signal inputs (RGB—I or X-RGB) and develope the R, G, and B signals in the monitor. By grounding the control input (Pin 1 of 8 pin Din Plug) the interface circuit will decode X-RGB to equal RGB-I signals in the monitor.

Interface P.C. Board Check

1. If either Apple (X-RGB) or IBM (RGB-I) signals are available as a TTL input the interface operation in the other signal mode may be checked. By grounding the control input on each color the other mode will appear. Pins 2, 3, 4, and 5 the 8 Pin Din Jack are high level when open. Use the cross reference chart for this cross color check.
2. To confirn proper operation of the RGB Interface Board, refer to the following truth table and ground the pins as shown. A voltmeter may be used to determine whether the output levels are high (1) or low (0). (Refer to schematic for pin nos.).
3. Another quick check may be done using a sine or square wave generator. A 1 to 3 kHz square wave (2Vp-p) may be injected into the pins of the DIN jack in the truth table. Color flashes should be visible on the screen which correspond to the pin or pins connected to the signal generator. Pin 2 should give red flashes, pin 3 green flashes, etc. when in the IBM mode. The colors will vary when pin 1 is grounded along with any of the others because the Apple colors are not the same as the IBM colors.

IBM TRUTH TABLE

INPUTS DIN PLUG PINS					OUTPUTS IC272 PINS								IC271 PINS	
(I) 5	(B) 4	(G) 3	(R) 2	* 1	1	2	3	4	5	6	7	9	11	13
0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
0	0	1	0	1	0	0	0	1	1	1	0	0	0	1
0	0	1	1	1	1	1	1	0	1	0	0	0	0	1
0	1	0	0	1	0	0	0	0	0	0	1	1	1	0
0	1	0	1	1	1	1	1	0	0	0	1	1	1	0
0	1	1	0	1	0	0	0	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1	0	0	1	1	1	1	1	0	0	0	0	0	0	0
1	0	1	0	1	0	0	0	1	1	1	0	0	0	1
1	0	1	1	1	1	1	1	1	1	1	0	0	0	1
1	1	0	0	1	0	0	0	0	0	0	1	1	1	0
1	1	0	1	1	1	1	1	0	0	0	1	1	1	0
1	1	1	0	1	0	0	0	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

IBM is a registered trademark of International Business Machines

APPLE TRUTH TABLE

INPUTS DIN PLUG PINS					OUTPUTS IC272 PINS								IC271 PINS	
(I) 5	(B) 4	(G) 3	(R) 2	* 1	1	2	3	4	5	6	7	9	11	13
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	1	0	0	1	0	0	1	0	0	0
0	0	1	0	0	0	1	0	0	0	0	0	1	0	1
0	0	1	1	0	1	1	0	1	0	0	1	1	0	1
0	1	0	0	0	0	0	0	0	1	0	0	0	1	0
0	1	0	1	0	1	0	0	1	1	0	1	0	1	0
0	1	1	0	0	0	1	0	0	1	0	0	1	1	1
0	1	1	1	0	1	1	0	1	1	0	1	1	1	1
1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
1	0	0	1	0	1	0	1	1	0	1	1	0	0	0
1	0	1	0	0	0	1	1	0	0	1	0	1	0	1
1	0	1	1	0	1	1	1	1	0	1	1	1	0	1
1	1	0	0	0	0	0	1	0	1	1	0	0	1	0
1	1	0	1	0	1	0	1	1	1	1	1	0	1	0
1	1	1	0	0	0	1	1	0	1	1	0	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1	1	1	1

* IBM/APPLE switching line. (open=IBM; ground=APPLE)

RGB-TTL INPUTS (8 PIN DIN)
Color Decoding Chart

Levels shown are with monitor driven by computer.

APPLE X-RGB	Pin 5 4 3 2	IBM RGB-I
BLACK	0 0 0 0	BLACK
MAGENTA	0 0 0 1	RED
DARK BLUE	0 0 1 0	GREEN
PURPLE	0 0 1 1	BROWN
DARK GREEN	0 1 0 0	BLUE
GREY 1	0 1 0 1	MAGENTA
MIDDLE BLUE	0 1 1 0	CYAN
LIGHT BLUE	0 1 1 1	WHITE
BROWN	1 0 0 0	GREY
ORANGE	1 0 0 1	LIGHT RED
GREY 2	1 0 1 0	LIGHT GREEN
PINK	1 0 1 1	LIGHT YELLOW
GREEN	1 1 0 0	LIGHT BLUE
YELLOW	1 1 0 1	LIGHT MAGENTA
AQUA	1 1 1 0	LIGHT CYAN
WHITE	1 1 1 1	INTENSIFIED WHITE

TTL Levels
Low (0) = Zero to .8 volts
High (1) = 2.4 to 5 volts

Pin 1 is Apple/IBM Control Line
Low (0) = Apple, High (1) = IBM Colors

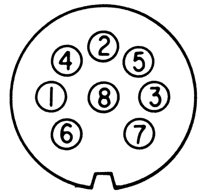
Apple is a registered trademark of Apple Computers

ADJUSTMENT PROCEDURES (Continued)

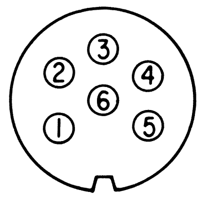
RGB 8 and 6 Pin DIN Sockets

PIN ASSIGNMENTS

PIN NO.	TTL INPUT 8 PIN SIGNAL	ANALOG 6 PIN SIGNAL
*1	IBM Open/Apple Gnd.	Green
2	Red	Horiz. Sync
3	Green	Ground
4	Blue	Red
5	Intensity	Blue
6	Ground	Vert. Sync
7	Horiz. Sync	
8	Vert. Sync	



TTL INPUT



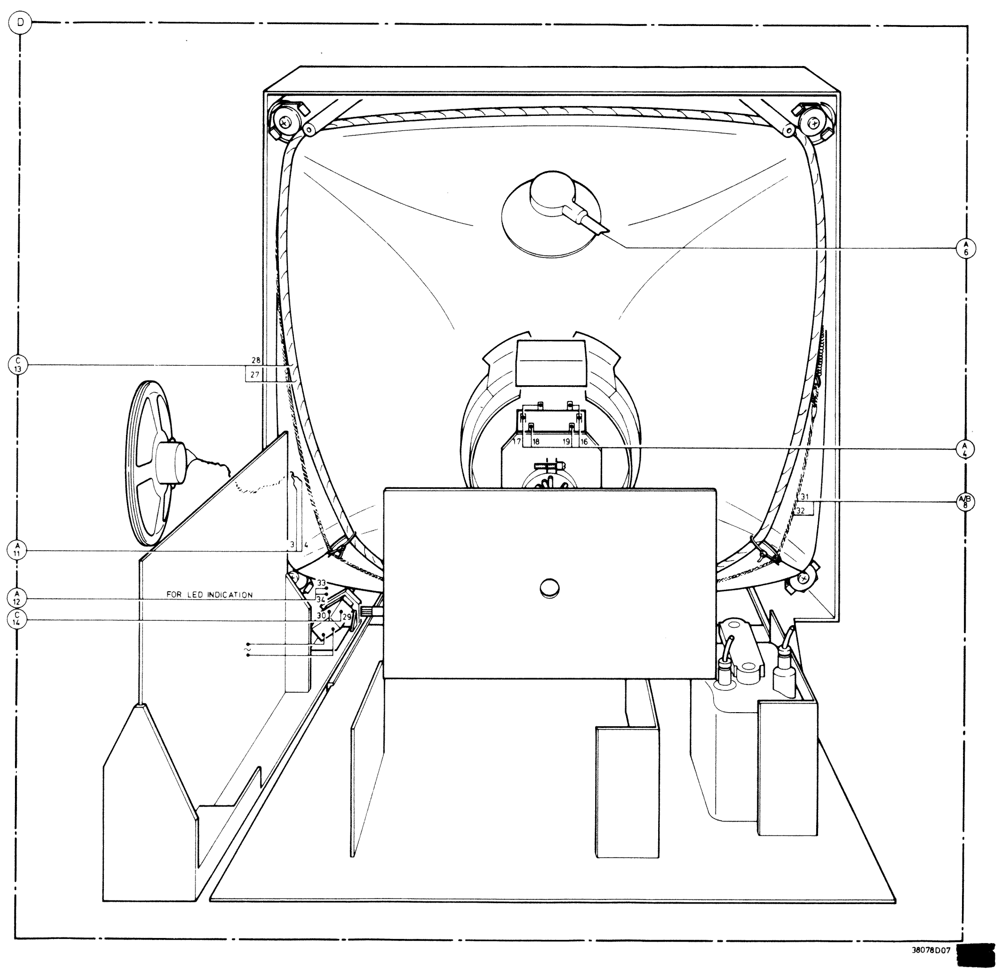
*ANALOG INPUT

When using these sockets before connecting the equipment, place the RGB/Composite Switch in the RGB position.

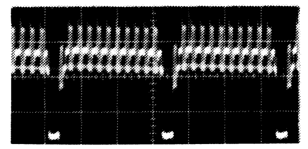
***Not used in CM8562/CM8762/8CM542**

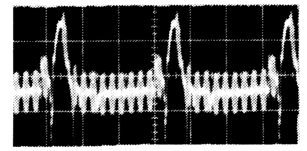
INTERCONNECT DIAGRAM

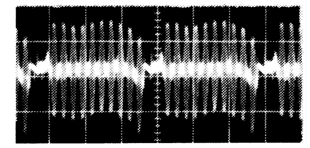
Note: To Remove Power Board Depress Locking Clip Located on Bottom of Cabinet Beneath Power Board.

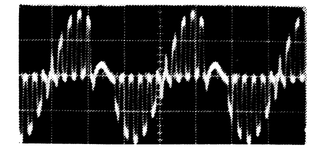


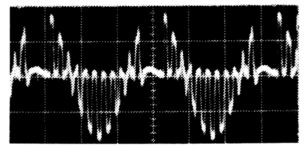
WAVEFORMS

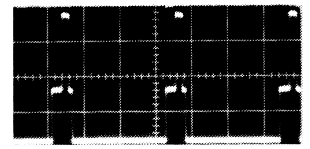

1. .7Vp-p 20μS

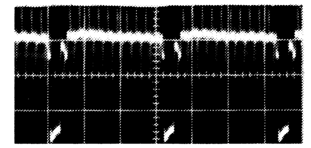

2. .1Vp-p 20μS

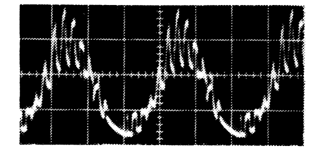

3. .65Vp-p 20μS

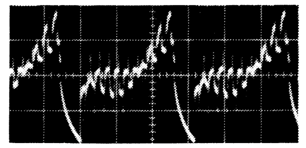

4. .45Vp-p 20μS

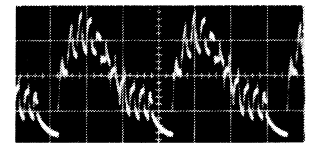

5. .7Vp-p 20μS

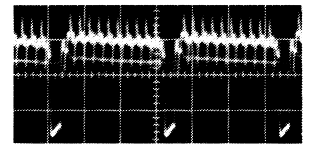

6. 10.2Vp-p 20μS

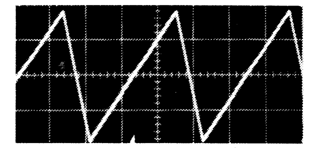

7. .25Vp-p 20μS

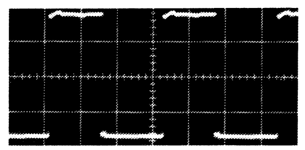

8. 2.5Vp-p 20μS

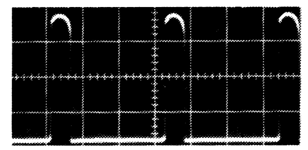

9. 1.4Vp-p 20μS

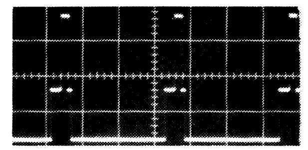

10. 1.75Vp-p 20μS

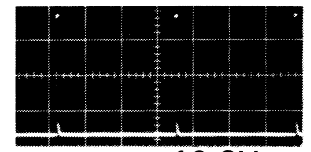

11. .8Vp-p 20μS

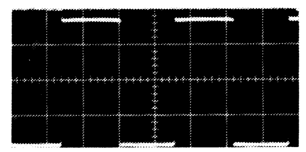

12. 3.2Vp-p 20μS

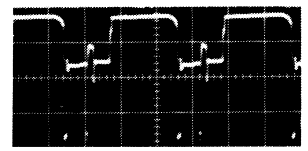

13. 1.7Vp-p 20μS

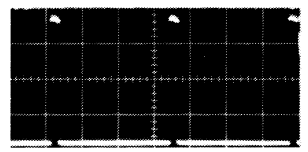

14. 5.8Vp-p 20μS

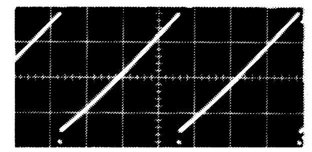

15. 10.3Vp-p 20μS

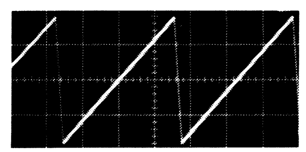

16. 10.2Vp-p 5mS

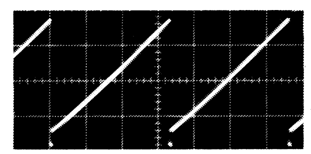

17. 48Vp-p 20μS

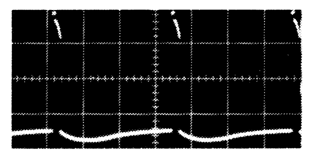

18. 11.5Vp-p 20μS

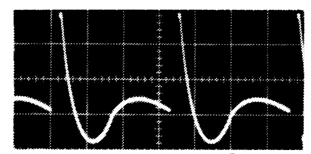

19. 19Vp-p 5mS

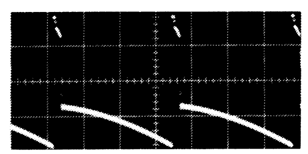

20. 11Vp-p 5mS

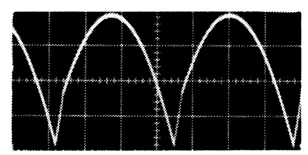

21. 2Vp-p 5mS

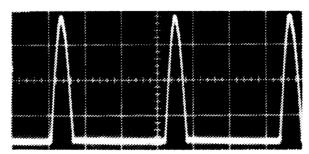

22. 11.3Vp-p 5mS

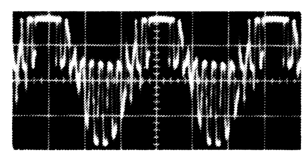

23. 24Vp-p 5mS

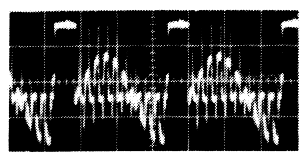

24. 1.9Vp-p 5mS

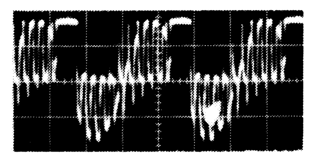

25. 47Vp-p 5mS


26. 4Vp-p 5mS


27. 100Vp-p 20μS


28. 65Vp-p 20μS


29. 44Vp-p 20μS

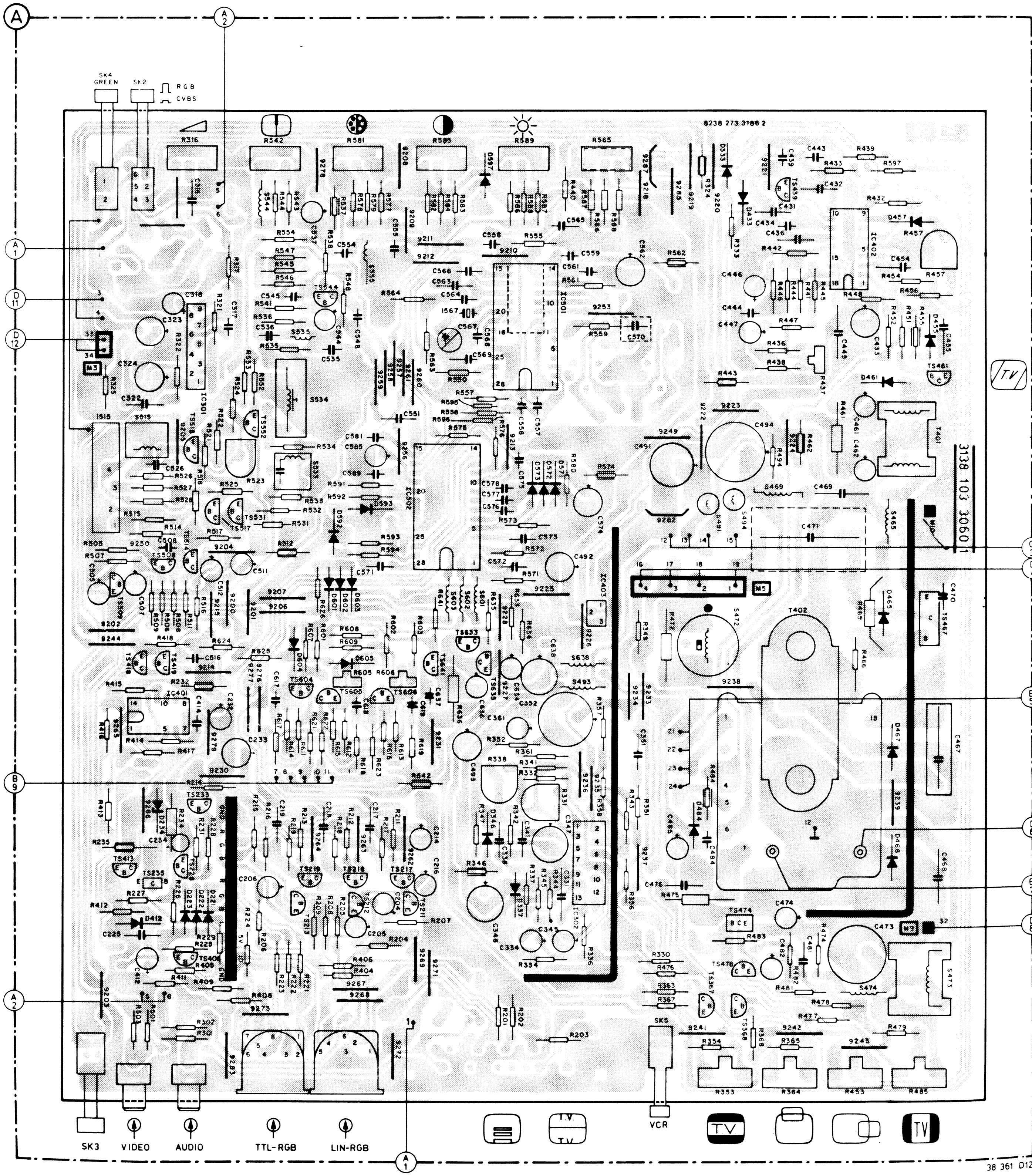

30. 64Vp-p 20μS

WAVEFORM NOTES
UNLESS OTHERWISE SPECIFIED:

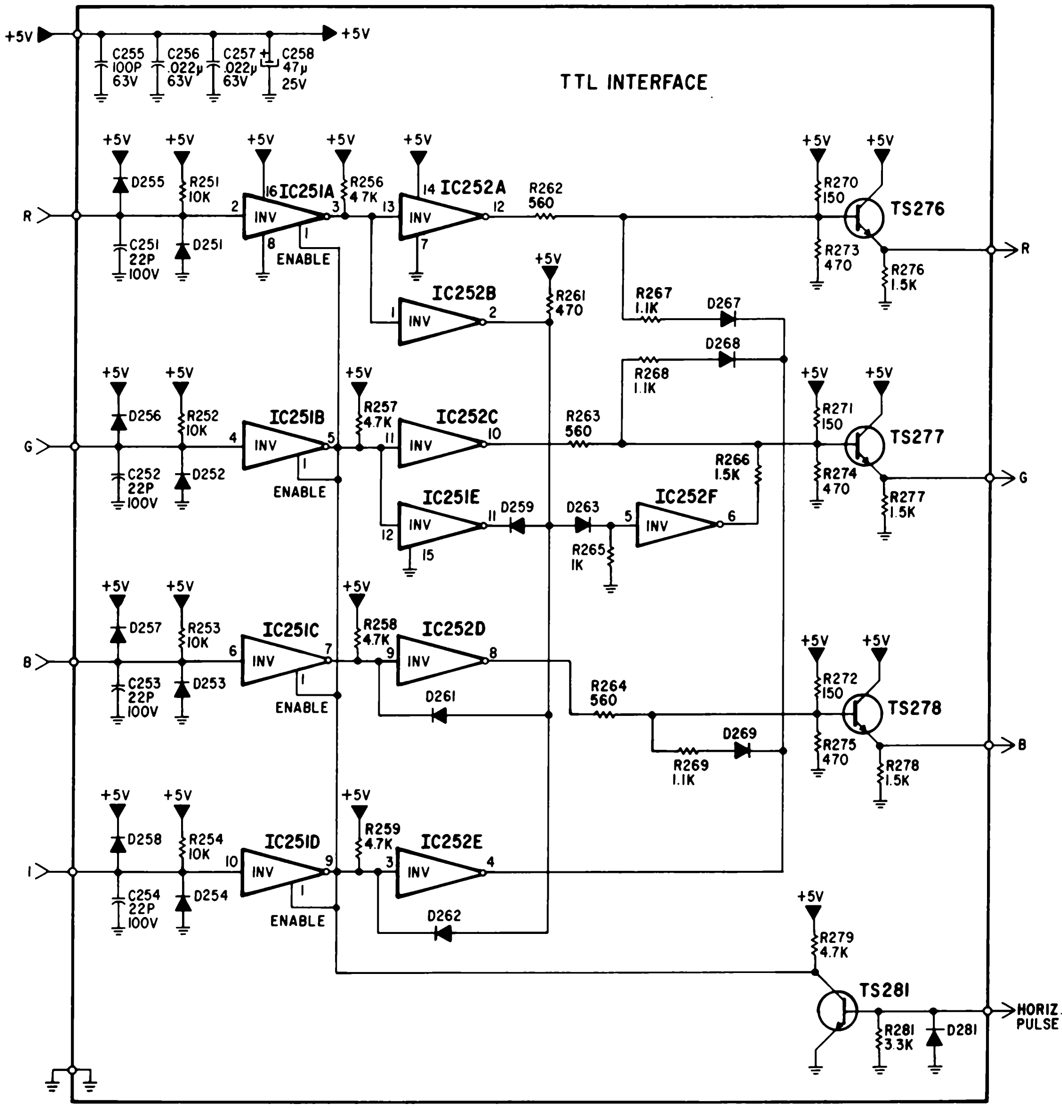
1. WAVEFORMS TAKEN UNDER THE CONDITIONS SPECIFIED THE SCHEMATIC NOTES.
2. SWEEP/TIME CM SETTINGS ARE SHOWN JUST BELOW PHOTOS. ALL PHOTOS WERE TAKEN WITH THE SWEEP TIME CONTROLS IN THE CALIBRATED POSITION. HORIZONTAL POSITIONING OF THE WAVEFORMS WAS ADJUSTED FOR MAXIMUM CLARITY.

8CM505/8CM515/8CM643/CM8505/CM8705 MAIN P.C. BOARD
(viewed from component side)

NOTE: When IC501 has 16 Pin IC the following parts are not used; R550, R559, R561 & C568



INTERFACE SCHEMATIC DIAGRAM
(Late Production Version)



SCHEMATICS NOTES:
UNLESS OTHERWISE SPECIFIED:

1. ALL VOLTAGES AND WAVEFORMS TAKEN UNDER THE FOLLOWING CONDITIONS:
   - LINE VOLTAGE MAINTAINED AT 120VAC, 60Hz VIA AN ISOLATION TRANSFORMER.
   CUSTOMER CONTROLS SET AS FOLLOWS:
   - VOLUME CONTROL (R316) SET TO MINIMUM.
   - COLOR CONTROL (R581) SET FOR 8.75VDC WIPER TO GROUND.
   - CONTRAST CONTROL (R585) SET FOR 8.7VDC WIPER TO GROUND.
   - BRIGHTNESS CONTROL (R589) SET FOR 5VDC WIPER TO GROUND.
   - HUE CONTROL (R565) SET FOR 6VDC WIPER TO GROUND.
   - SK2 IN CVBS POSITION.
   - SK3, SK4 & SK5 OFF.

   E.P. REFERS TO EARLY PRODUCTION
   L.P. REFERS TO LATE PRODUCTION
2. VOLTAGES AND WAVEFORMS WERE TAKEN USING A 10 BAR GATED RAINBOW PATTERN SIGNAL SET TO DELIVER CHROMA BARS OF .5Vp-p AT THE VIDEO IN JACK.
3. ALL VOLTAGES ARE POSITIVE DC WITH RESPECT TO GROUND, BE IT THE ISOLATED (SIGNAL) GROUND OR THE AC (HOT) GROUND WHICHEVER IS PRESENT IN THAT AREA OF CIRCUITRY.
4. VOLTAGES MAY VARY DUE TO NORMAL PRODUCTION TOLERENCES. VOLTAGE SOURCES ARE ALSO NOMINAL.
5. RESISTORS ARE ALL 5%, ¼W, CARBON FILM EXCEPT FOR SOME UNIQUE PARTS. REFER TO REPLACEMENT PARTS LIST.
6. CAPACITOR VALUES ARE IN MICROFARADS & PICOFARADS. REFER TO SCHEMATIC DIAGRAM FOR VALUES AND VOLTAGES EXCEPT FOR UNIQUE PARTS SHOWN IN REPLACEMENT PARTS LIST.

WARNING

Critical components having special safety characteristics are identified with an S by the Ref. No. in the parts list and enclosed within a broken line* along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from the N.A.P. Consumer Electronics Corp. NAPCEC assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

*** Broken line: ▬ • ▬ • ▬ • ▬ •**

8CM505/8CM515/8CM643/CM8505/CM8705 SCHEMATIC DIAGRAM

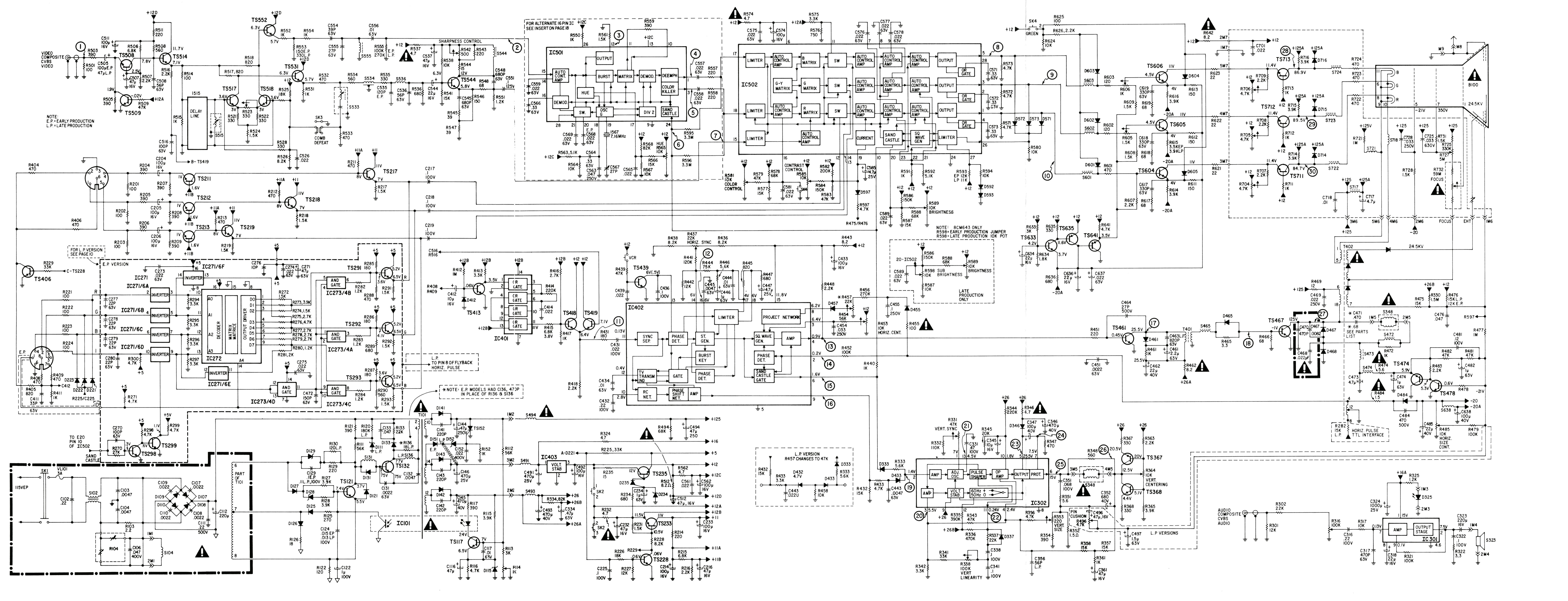
(Parts List - Pgs. 23, 24, 25)

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

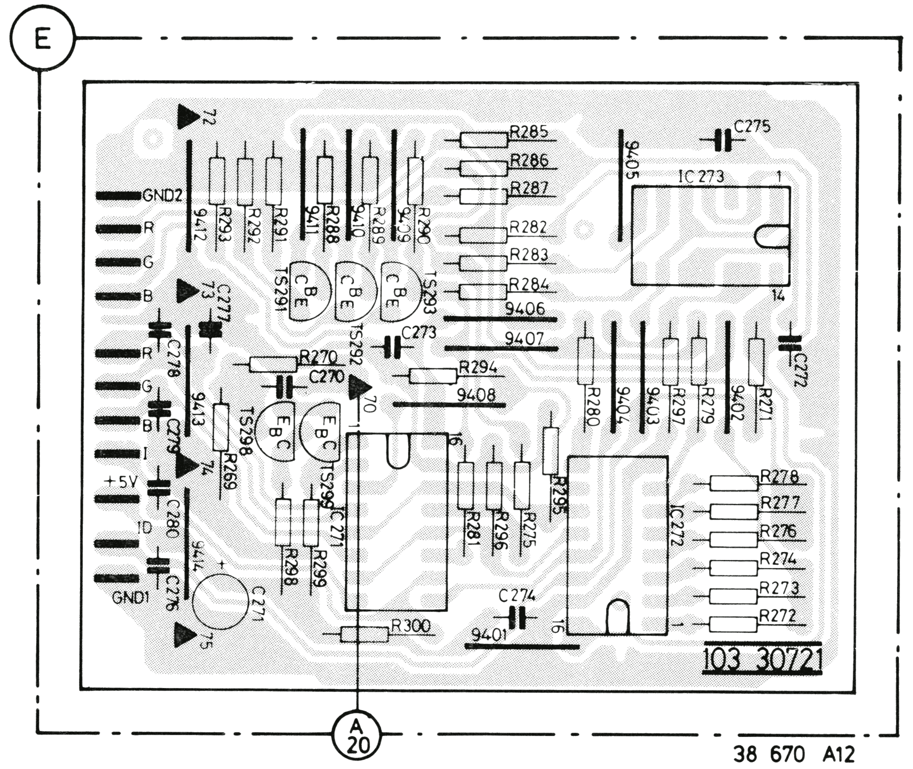
INDICATES "HOT" GROUND.

INDICATES ISOLATED SIGNAL GROUND.

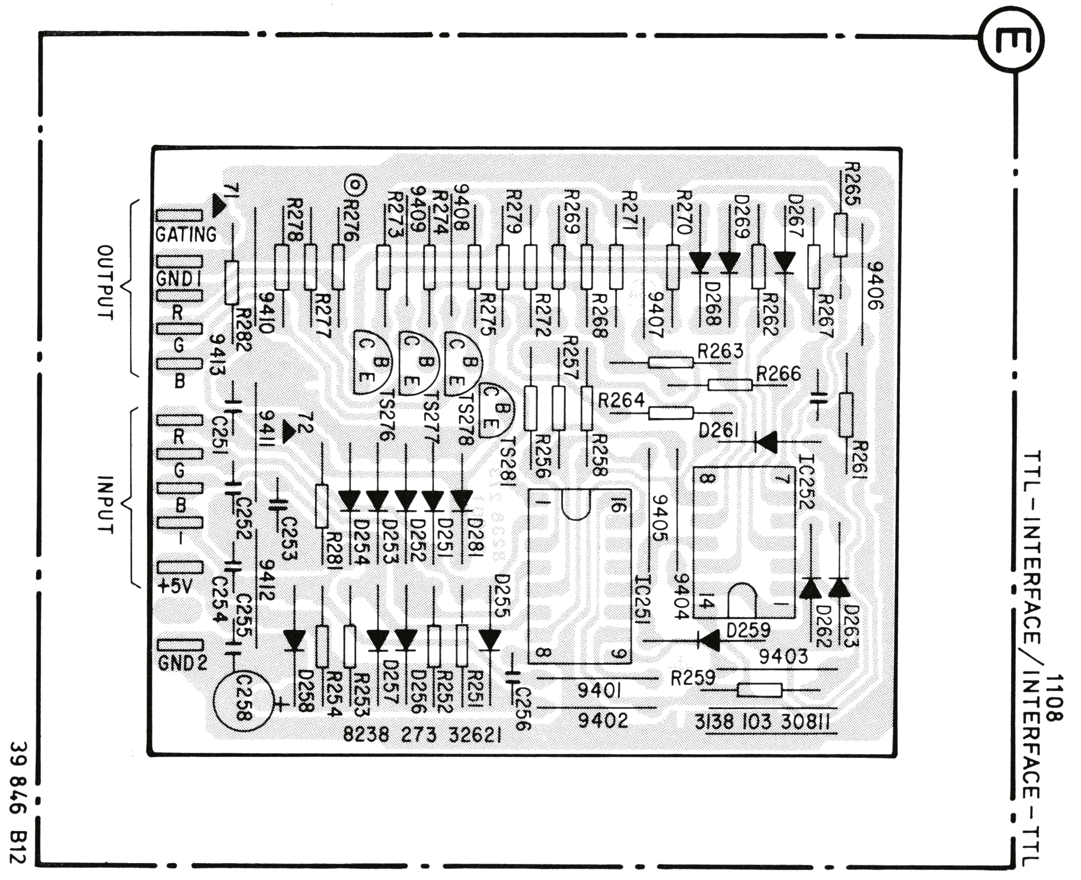
NOTE: IC501 Alternate 16 Pin IC, see Insert page 18



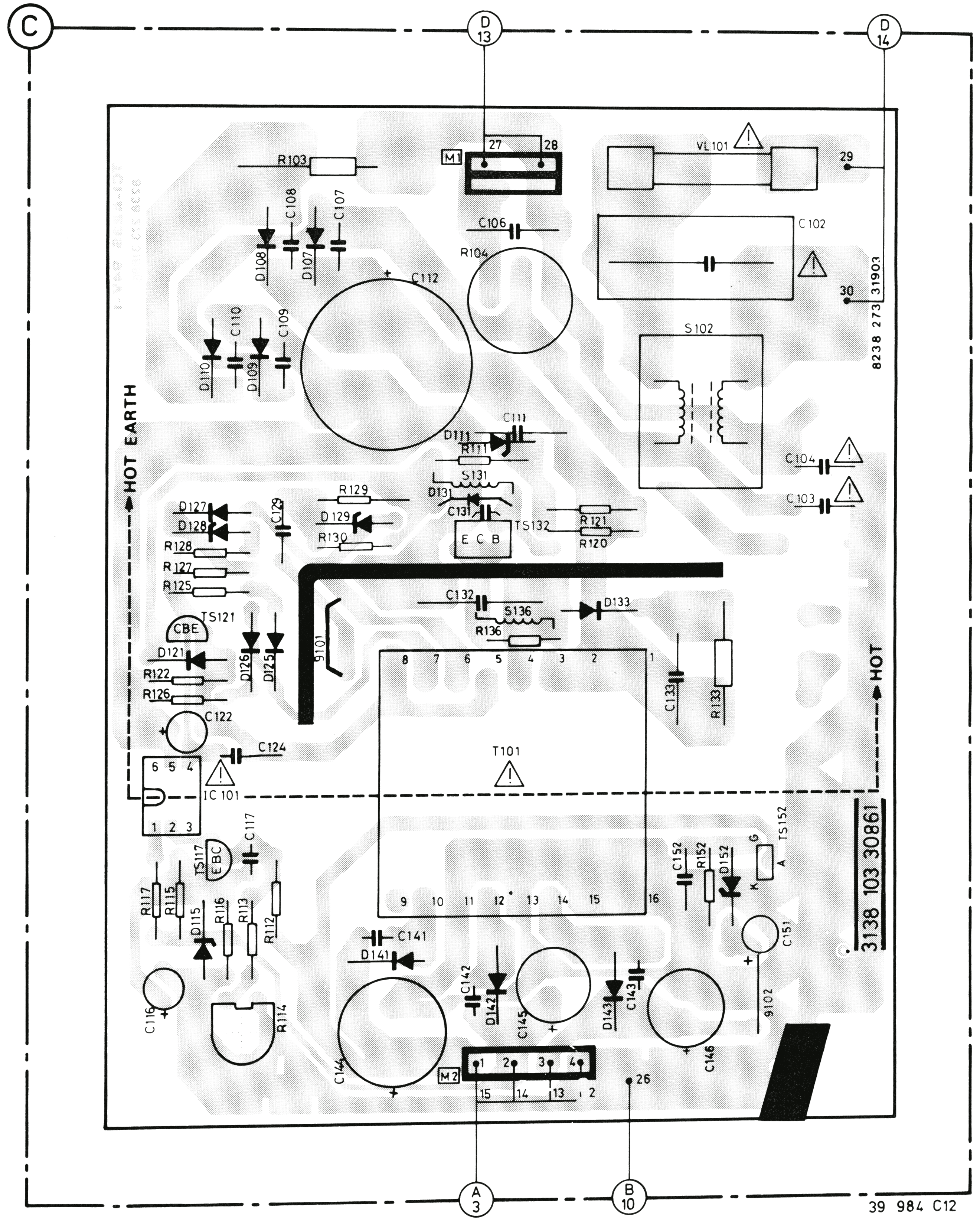
8CM505/8CM515/8CM643/CM8505/CM8705 RGB INTERFACE P.C. BOARD
(Early Production Version)
(viewed from component side)



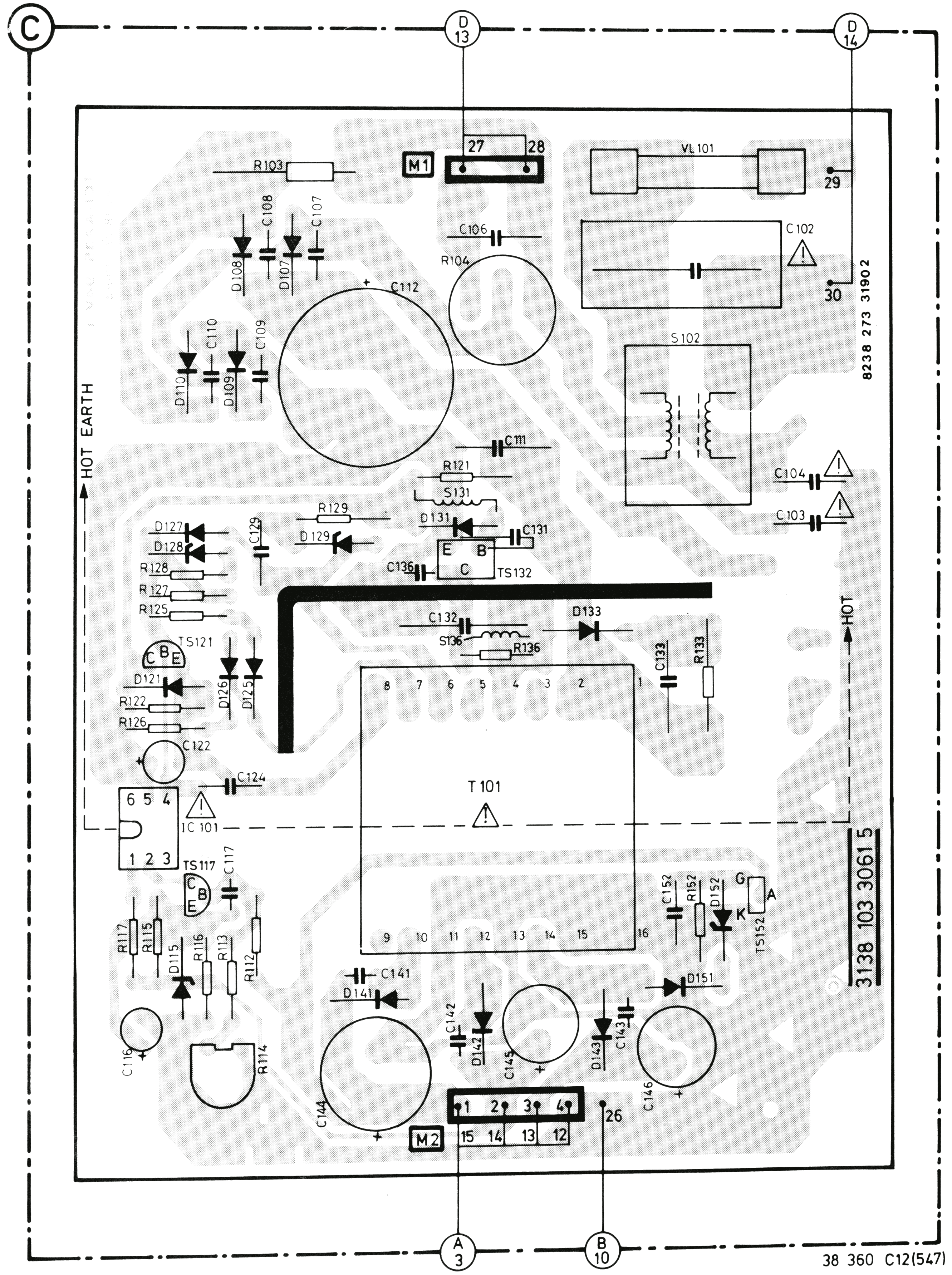
INTERFACE P.C. BOARD
(Late Production Versions)
(viewed from component side)



POWER SUPPLY P.C. BOARD (Late Production Version)
(viewed from component side)

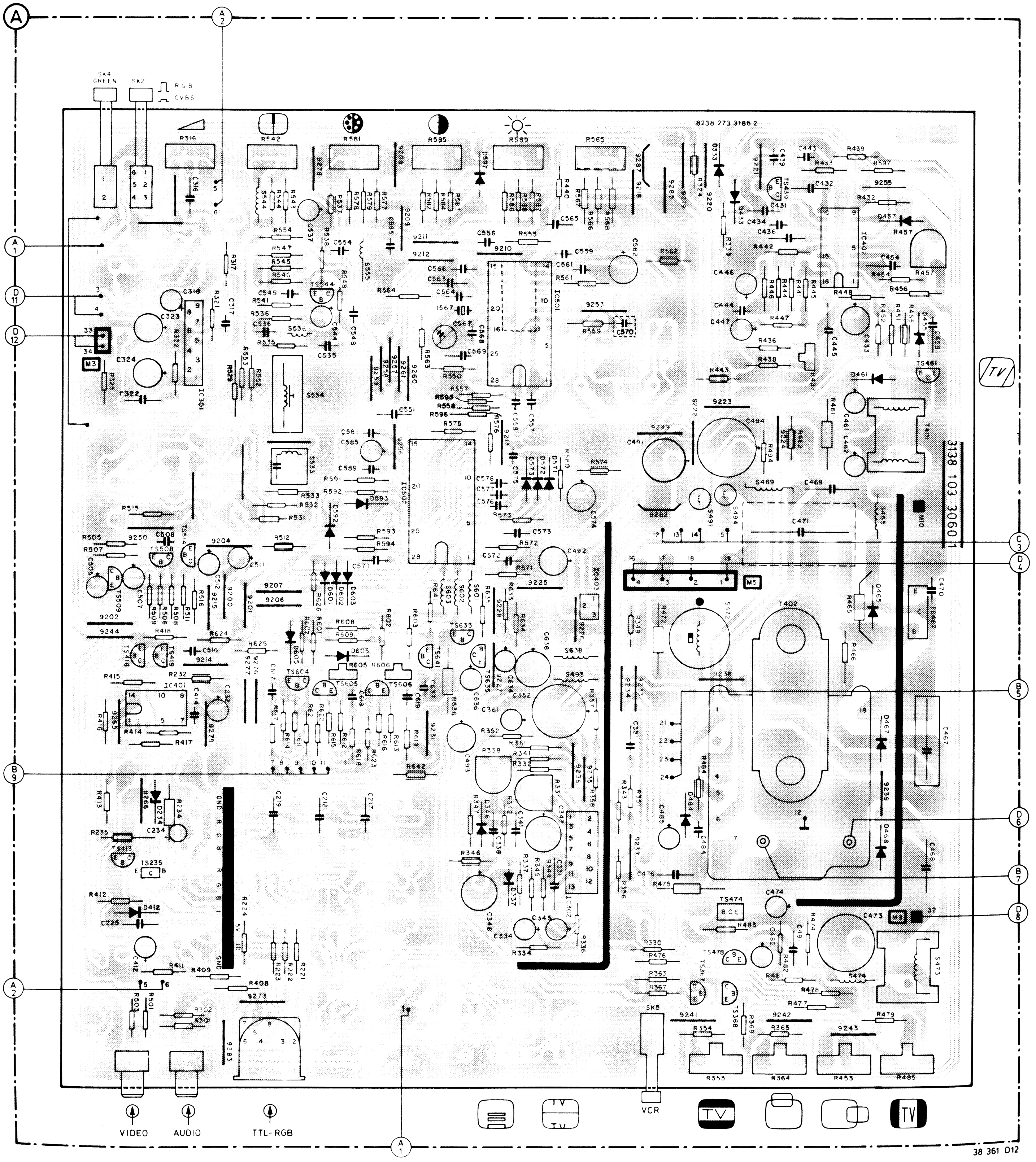


POWER SUPPLY P.C. BOARD (Early Production Version)
(viewed from component side)

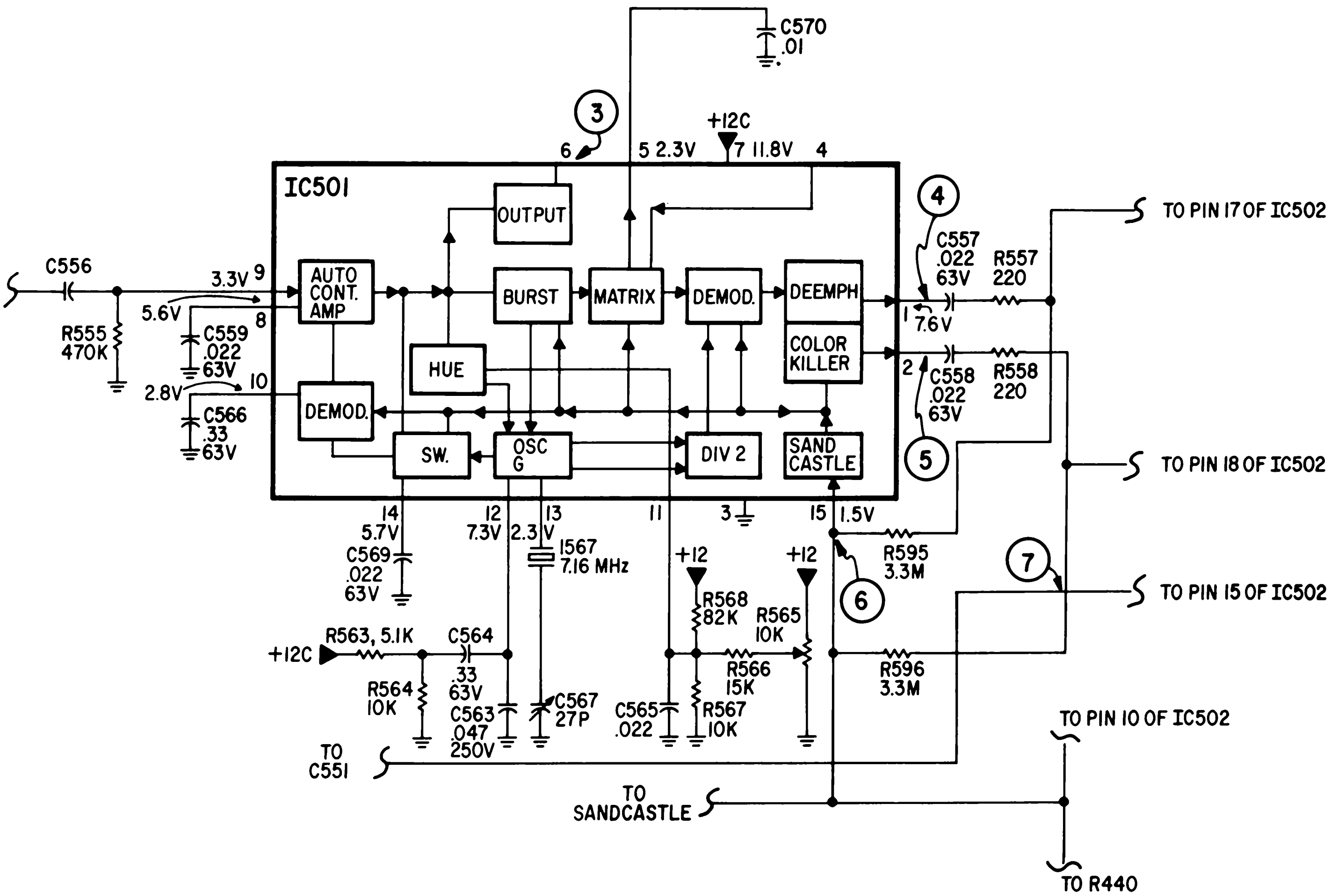


8CM542/CM8562/CM8762 MAIN P.C. BOARD
(viewed from component side)

NOTE: When IC501 has 16 Pin IC the following parts are not used; R550, R559, R561 & C568



IC501 ALTERNATE 16 PIN IC



SCHEMATIC NOTES
UNLESS OTHERWISE SPECIFIED:

1. ALL VOLTAGES AND WAVEFORMS TAKEN UNDER THE FOLLOWING CONDITIONS:
   - LINE VOLTAGE MAINTAINED AT 120VAC, 60Hz VIA AN ISOLATION TRANSFORMER.
   CUSTOMER CONTROLS SET AS FOLLOWS:
   - VOLUME CONTROL (R316) SET TO MINIMUM.
   - COLOR CONTROL (R581) SET FOR 8.75VDC WIPER TO GROUND.
   - CONTRAST CONTROL (R585) SET FOR 8.7VDC WIPER TO GROUND.
   - BRIGHTNESS CONTROL (R589) SET FOR 5VDC WIPER TO GROUND.
   - HUE CONTROL (R565) SET FOR 6VDC WIPER TO GROUND.
   - SK2 IN CVBS POSITION.
   - SK3, SK4 & SK5 OFF.

   E.P. REFERS TO EARLY PRODUCTION
   L.P. REFERS TO LATE PRODUCTION
2. VOLTAGES AND WAVEFORMS WERE TAKEN USING A 10 BAR GATED RAINBOW PATTERN SIGNAL SET TO DELIVER CHROMA BARS OF .5Vp-p AT THE VIDEO IN JACK.
3. ALL VOLTAGES ARE POSITIVE DC WITH RESPECT TO GROUND, BE IT THE ISOLATED (SIGNAL) GROUND OR THE AC (HOT) GROUND WHICHEVER IS PRESENT IN THAT AREA OF CIRCUITRY.
4. VOLTAGES MAY VARY DUE TO NORMAL PRODUCTION TOLERENCES. VOLTAGE SOURCES ARE ALSO NOMINAL.
5. RESISTORS ARE ALL 5%, ¼W, CARBON FILM EXCEPT FOR SOME UNIQUE PARTS. REFER TO REPLACEMENT PARTS LIST.
6. CAPACITOR VALUES ARE IN MICROFARADS & PICOFARADS. REFER TO SCHEMATIC DIAGRAM FOR VALUES AND VOLTAGES EXCEPT FOR UNIQUE PARTS SHOWN IN REPLACEMENT PARTS LIST.

WARNING

Critical components having special safety characteristics are identified with an S by the Ref. No. in the parts list and enclosed within a broken line* along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from the N.A.P. Consumer Electronics Corp. NAPCEC assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

* Broken line: ▬ • ▬ • ▬ • ▬ •

8CM542/CM8562/CM8762 SCHEMATIC DIAGRAM

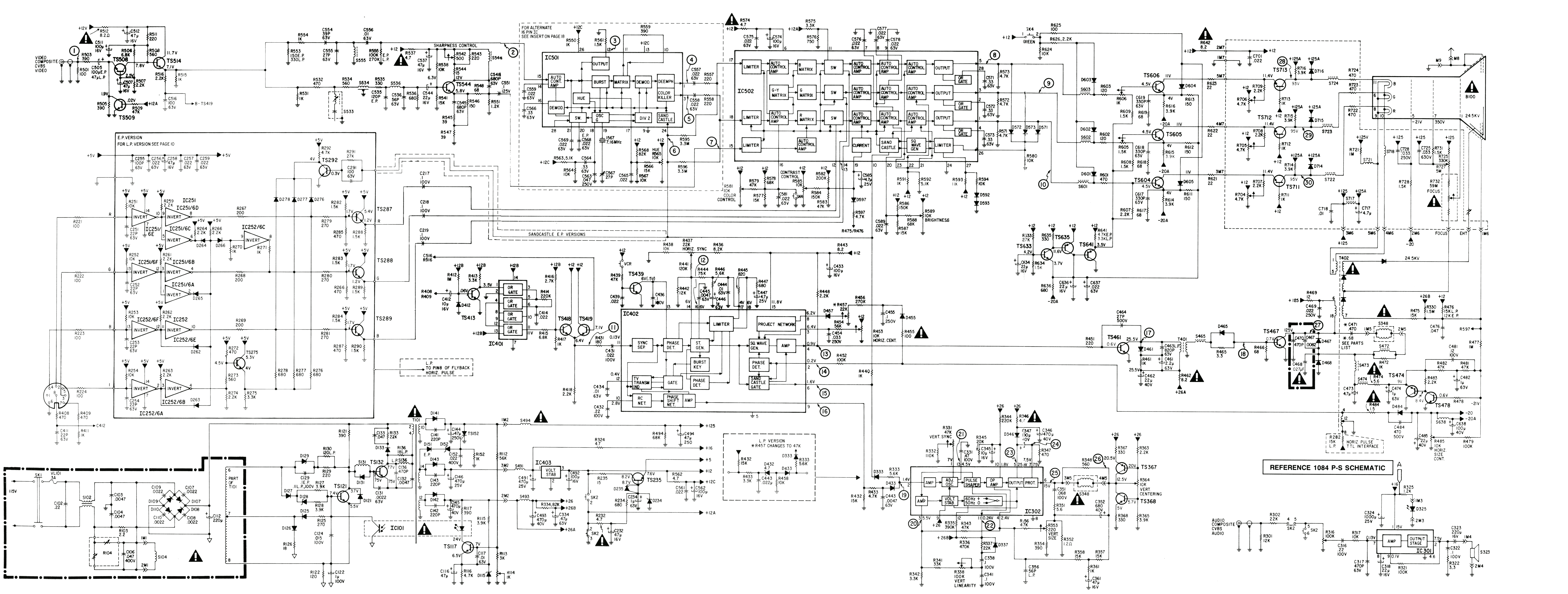
(Parts List - Pgs. 23, 24, 25)

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

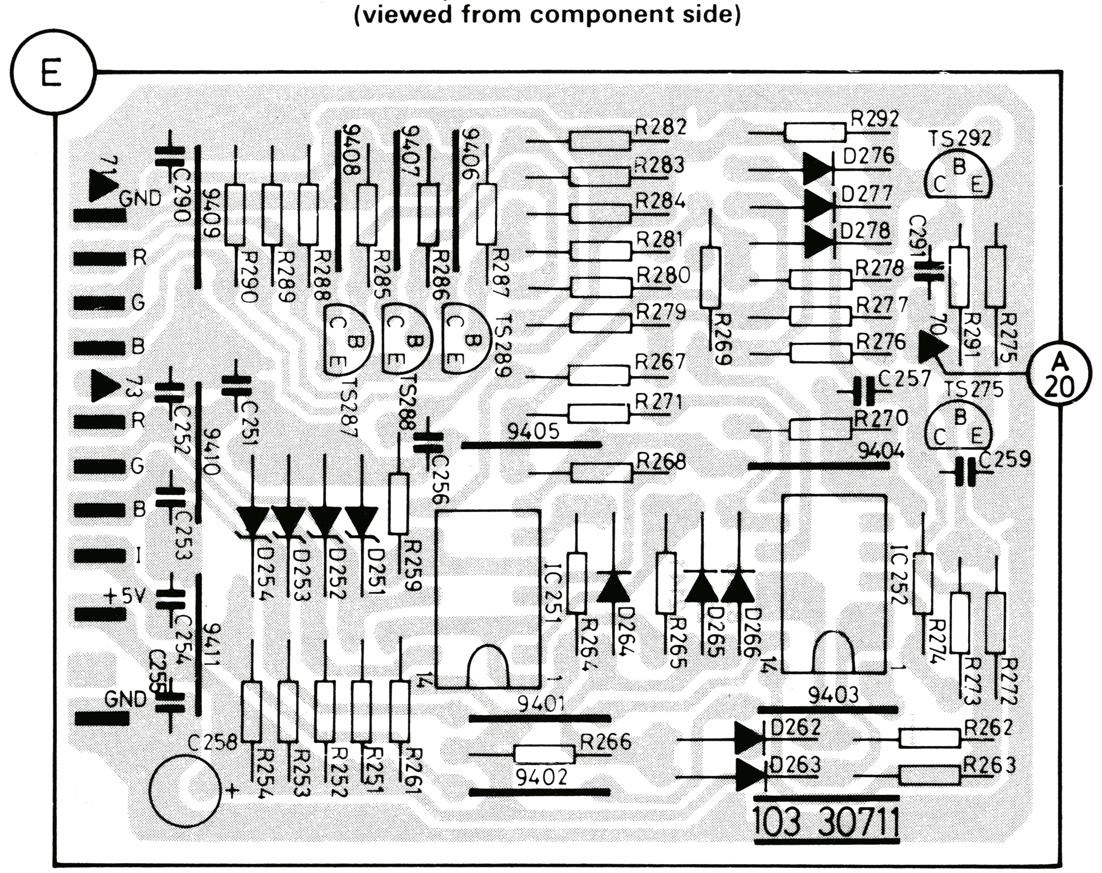
▽ INDICATES "HOT" GROUND.

⏚ INDICATES ISOLATED SIGNAL GROUND.

NOTE: IC501 Alternate 16 Pin IC, See Insert Page 18

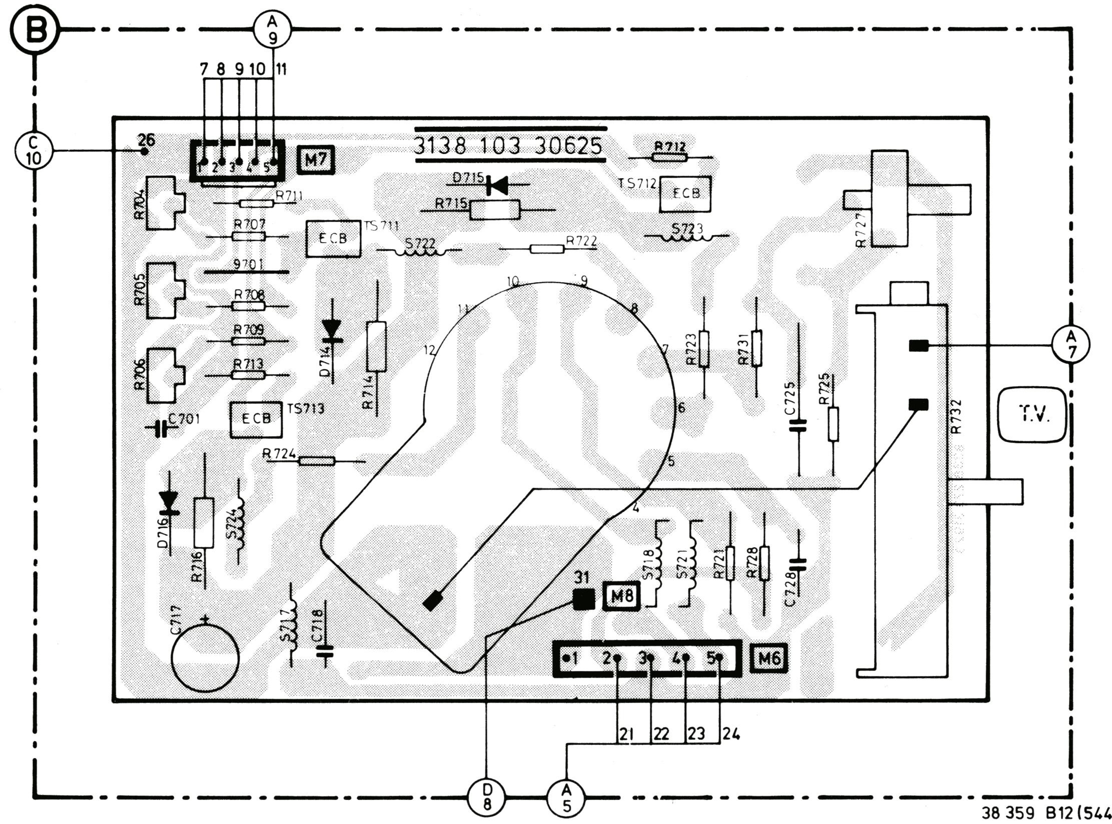


8CM542/CM8562/CM8762 RGB INTERFACE P.C. BOARD
(Early Production Version)
(viewed from component side)



38 671 A12

CRT P.C. BOARD
(viewed from component side)



38 359 B12(544)

ELECTRICAL REPLACEMENT PARTS LIST

TO ENSURE OPTIMUM PERFORMANCE AND RELIABILITY ALWAYS USE GENUINE FACTORY REPLACEMENT PARTS

WARNING

(Schem. - Pgs. 11, 12, 13/19, 20, 21)

Critical components having special safety characteristics are identified with an S by the Ref. No. in the parts list and enclosed within a broken line* along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from the N.A.P. Consumer Electronics Corp. NAPCEC assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

* Broken line: — · — · — · —

CM8505/CM8562/CM8705/CM8762/8CM505/8CM643/8CM515/8CM542 REPLACEMENT PARTS LIST

	Ref.	Description	Part No.
	COILS & TRANSFORMERS		
S	S102	Line Choke	3693400001
S	S104	Degaussing Coil	3693100005
	S131	10uH Coil	3618271360
	S136	2uH, Coil (L.P.)	5699000032
S	S348	Deflection Yoke	Part of CRT
	S465	7.5uH Coil	3290000013
	S472	Coil	3618271363
	S473	720uH Coil	3618271362
	S474	Coil	3618271364
	S491	100uH Coil	3618271361
	S493	Coil	3618271358
	S494	100uH Coil	3618271361
	S515	3.58MHz Coil (CM8505/CM8705/ 8CM505/8CM515/8CM643)	3618271369
	S533	3.58MHz Coil	3618271342
	S534	Delay Line	1606770123
	S536	39uH Coil	3618271367
	S544	6.8uH Coil	3618271377
	S555	27uH Coil	3618271379
	S601	2.2uH Coil	3618271378
	S602	2.2uH Coil	3618271378
	S603	2.2uH Coil	3618271378
	S638	120uH Coil	3618271358
	S717	8.2uH Coil	3618271366
	S718	10uH Coil	3618271360
	S721	10uH Coil	3618271360
	S722	4.7uH Coil	3618271359
	S723	4.7uH Coil	3618271359
	S724	4.7uH Coil	3618271359
S	T101	Transformer	3090200003
	T401	Horizontal Drive Transformer	3293000001
S	T402	Output Transformer	3291000006
	1515	Delay Line (CM8505/CM8705/ 8CM505/(CM515)	1606770121
	CAPACITORS		
S	C102	.22uF., 125VAC, Polyester Film	2602320550
S	C103	.0047uF., 125VAC, Ceramic	2602320532
S	C104	.0047uF., 125VAC, Ceramic	2602320532
S	C106	.047uF., 400V, Polyester Film	2506564739
S	C107	.0022uF., 1kV, Ceramic	2509041035
S	C108	.0022uF., 1kV, Ceramic	2509041035
S	C109	.0022uF., 1kV, Ceramic	2509041035
S	C110	.0022uF., 1kV, Ceramic	2509041035
S	C111	.22uF., 250V, Polyester Film (L.P.)	2506552249
S	C112	220uF., 50V, Electrolytic	2509040485
	C132	.0047uF., 630V, Polyester Film	2509040712
	C136	470pF., 2KV (E.P.)	2602320547
	C141	220pF., 500V, Ceramic	2602320546
	C142	220pF., 500V, Ceramic	2602320546
	C143	220pF., 500V, Ceramic	2602320546
	C443	.022uF., 50V	2602320529
S	C467	.0082uF., 1.5kV, Polyester Film	2602320549
S	C468	.022uF., 400V, Polypropylene	2602320597
S	C470	470pF., Ceramic	2602320547
	C471	.47uF., 250V, Polyester Film (8CM515/CM8562/8CM643)	2602320551
	C471	.68uF., 10%, 250V, Polyester Film (CM8505/CM8705/8CM505)	2509040718
	C473	4.7uF., 50V, Bipolar	2701740675
	C508	56pF., 2%, 100V, Ceramic (CM8505/CM8705/8CM505/ 8CM515/8CM643)	2602320544
	C535	120pF., 50V, Ceramic	2602320552
	C554	39PF., 5%, 50%, Ceramic	2509041033
	C555	27pF., 5%, 50V, Ceramic	2509041032

	Ref.	Description	Part No.
	RESISTORS (unless otherwise specified, all are 5%, ¼W, Metal Film, Flame Retardant)		
	C718	.01uF., 500V, Ceramic	2509040919
S	R103	2.2 ohm, 7W, Wire Wound	2401440096
S	R104	Dual PTC	4H11640035
	R121	390k, Carbon Film	2302861029
	R133	22k, 2W, Metal Film	2301922235
S	R232	4.7 ohm	4H11130499
	R235	15 ohm	2302681595
S	R324	4.7 ohm	2302684785
S	R346	4.7 ohm	2302684785
	R433	3.3k	2302823325
	R443	8.2 ohm	2302688285
	R455	100 ohm	2302681015
	R458	10k	2302821035
	R461	1k, 2W, Metal Film	2394061025
S	R462	8.2 ohm	2302688285
	R465	3.3 ohm, 2W, Metal Film	2394063395
	R469	12 ohm, 5W, Wire Wound	2401440102
	R472	1k, 2W, Metal Film	2394061025
S	R474	5.6 ohm	2302685685
	R475	15k, 2W, Metal Film	2302861027
S	R484	1.5 ohm	2302861585
S	R512	8.2 ohm	2302688285
S	R537	4.7 ohm	2302684785
	R562	4.7 ohm	2302684785
S	R574	4.7 ohm	2302684785
	R636	680 ohm, 2W, Metal Film	2394066815
S	R642	8.2 ohm	2302688285
	R714	3.9k, 3W, Metal Film	2302861028
	R715	3.9k, 3W, Metal Film	2302861028
	R716	3.9k, 3W, Metal Film	2302861028
	R721	1M, ½W, Carbon Composition	2394041055
	R722	470 ohm, ½W, Carbon Composition	2302124715
	R723	470 ohm, ½W, Carbon Composition	2302124715
	R724	470 ohm, ½W, Carbon Composition	2302124715
	R725	330k, ½W, Carbon Composition	2302123342
	R728	1.5k, ½W, Carbon Composition	2302641525
	R731	1.5k, ½W, Carbon Composition	2302641525
	CONTROLS & SWITCHES		
	C567	Trimmer Capacitor, 27pF.	2602320548
	R114	Trimpot, 1k	2291010058
	R316	Volume Control, 100k	2204290729
	R331	Vertical Frequency Control, 47k	2291010053
	R338	Vertical Linearity Control, 100k	2291010060
	R353	Vertical Size Control, 220k	2204290761
	R364	Vertical Centering Control, 10k	2291010086
	R437	Horizontal Frequency Control, 22k	2204291040
	R453	Horizontal Centering Control, 10k	2291010086
	R457	Trimpot, 22k (E.P.)	2204692232
	R457	Trimpot, 47k (L.P.)	2302124732
	R485	Horizontal Size Control, 10k	2291010086
	R496	Pin Cushion, 4.7k (8CM643)	2291010052
	R523	Trimpot, 330 ohm (CM8505/ CM8705/8CM515/8CM515/ 8CM643)	2204290732
	R542	Sharpness Control, 500 ohm	2204290727
	R565	Trimpot, 10k	2204290728
	R581	Color Control, 10k	2204290728
	R585	Contrast Control, 10k	2204290728
	R589	Brightness Control, 10k	2204290728
	R598	Sub Brightness, 10k (8CM643)	2203011032
	R605	Trimpot, 1k	2204290725
	R606	Trimpot, 1k	2204290725
	R704	Trimpot, 4.7k	2291010052
	R705	Trimpot, 4.7k	2291010052

	Ref.	Description	Part No.
	CONTROLS & SWITCHES (Continued)		
	R706	Trimpot, 4.7k	4H10010236
	R727	Potentiometer, 5M	2204290726
S	R732	Focus Control, 59M	2204290730
S	SK1	Power Switch	1606780548
	SK2	RGB/CVBS Switch	1606780549
	SK3	Comb Filter Switch (CM8505/ CM8705/8CM505/8CM515)	1606780549
	SK4	Green Switch	1606780549
	SK5	VCR Switch	1606780549
	SEMICONDUCTORS		
S	IC101	Optic Coupler IC	5303110001
	IC251	Inverter IC (CM8562)	6193100140
	IC252	Inverter IC (CM8562)	6193100140
	IC271	Inverter IC (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6121970001
	IC272	Decoder/Matrix IC (CM8505/CM8705/8CM505/ 8CM515/8CM643)	6193100070
	IC273	AND Gate IC (CM8505/8CM505/ 8CM515/8CM643)	6121990001
	IC301	Audio Amp IC	6192001060
	IC302	Vertical Signal Processor IC	6123300289
	IC401	Exclusive OR Gate IC	6122890001
	IC402	Horizontal Signal Processor IC	6123300330
	IC403	Voltage Stabilizer IC	6192140331
	IC501	Video Processor IC (28 Pin)	6123300332
	IC501	Video Processor IC (16 Pin)	6123300374
	IC502	Video Processor/Video Amp IC	6192080240
	TS117	NPN, Silicon	6105000004
	TS121	NPN, Silicon	6190004040
	TS132	NPN, Silicon	6190002200
	TS152	Thyristor	6191400010
	TS211	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001
	TS212	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001
	TS213	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001
	TS217	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001
	TS218	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001
	TS219	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001
	TS228	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001
	TS233	PNP, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6190101480
	TS235	NPN, Silicon	6190004860
	TS275	NPN, Silicon (CM8562/CM8762/ 8CM542)	6104350002
	TS287	NPN, Silicon (CM8562/CM8762/ 8CM542)	6103700001
	TS288	NPN, Silicon (CM8562/CM8762/ 8CM542)	6103700001
	TS289	NPN, Silicon (CM8562/CM8762/ 8CM542)	6103700001
	TS291	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001
	TS292	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6104350002
	TS293	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001
	TS298	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001
	TS299	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6104350002
	TS367	PNP, Silicon	6190101480
	TS368	NPN, Silicon	6103680002
	TS406	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6104350002
	TS413	NPN, Silicon	6104350002
	TS418	NPN, Silicon	6103700001
	TS419	NPN, Silicon	6103700001
	TS439	NPN, Silicon	6104350002
	TS461	NPN, Silicon	6105350003
	TS467	NPN, Silicon	6104330001
	TS474	PNP, Silicon	6104380001
	TS478	NPN, Silicon	6104350002
	TS508	NPN, Silicon	6103700001
	TS509	NPN, Silicon	6104350002
	TS514	NPN, Silicon	6103700001
	TS517	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001
	TS518	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001

	Ref.	Description	Part No.
	SEMICONDUCTORS (Continued)		
	TS531	NPN, Silicon (CM8505/CM8706/ 8CM505/8CM515/8CM643)	6103700001
	TS544	NPN, Silicon	6103700001
	TS552	NPN, Silicon (CM8505/CM8705/ 8CM505/8CM515/8CM643)	6103700001
	TS604	NPN, Silicon (CM8505/CM8705/ 8CM505)	6103700001
	TS604	NPN, Silicon (8CM515/CM8562/ CM8762/8CM542)	4H13041594
	TS605	NPN, Silicon (CM8505/CM8705/ 8CM505)	6103700001
	TS605	NPN, Silicon (8CM515/CM8562/ CM8762/8CM542)	4H13041594
	TS606	NPN, Silicon (CM8505/C8705/ 8CM505)	6103700001
	TS606	NPN, Silicon (8CM515/CM8562/ CM8762/8CM542)	4H13041594
	TS633	NPN, Silicon	6104350002
	TS635	NPN, Silicon	6105270002
	TS641	NPN, Silicon	6103720002
	TS711	NPN, Silicon	6104390001
	TS712	NPN, Silicon	6104390001
	TS713	NPN, Silicon	6104390001
S	D107	Diode	5391200341
S	D108	Diode	5391200341
S	D109	Diode	5391200341
S	D110	Diode	5391200341
	D111	Diode (L.P.)	5302250240
	D115	Zener Diode	5301570629
	D121	Diode	5301811002
	D125	Diode	5301811002
	D126	Diode	5301811001
	D127	Diode	5301811001
	D128	Zener Diode	4H13030862
	D129	Zener Diode, 2.4V	4H13031253
	D131	Diode	5301811002
	D133	Diode	4H13031393
	D141	Diode	4H13032833
	D142	Diode	4H13031607
	D143	Diode	5H13031971
	D151	Diode	5302681002
	D152	Diode	4H13031024
	D221	Diode (CM8505/CM8705/ 8CM505/8CM515/8CM643)	5301811002
	D222	Diode (CM8505/CM8705/ 8CM505/8CM515/8CM643)	5301811002
	D223	Diode (CM8505/CM8705/ 8CM505/8CM515/8CM643)	5301811002
	D234	Zener Diode	4H13034167
	D262	Diode (CM8562/CM8762/ 8CM542)	5801811002
	D263	Diode (CM8562/CM8762/ 8CM542)	5801811002
	D264	Diode (CM8562/CM8762/ 8CM542)	5801811002
	D265	Diode (CM8562/CM8762/ 8CM542)	5801811002
	D266	Diode (CM8562/CM8762/ 8CM542)	5801811002
	D276	Diode (CM8562/CM8762/ 8CM542)	5801811002
	D277	Diode (CM8562/CM8762/ 8CM542)	5801811002
	D278	Diode (CM8562/CM8762/ 8CM542)	5801811002
	D325	Green LED	5392100470
	D333	Diode	5301811002
	D337	Diode	5301811002
	D346	Diode	5301711002
	D412	Diode	5301811002
	D432	Zener Diode, 4.7V	5390150479
	D433	Diode	5301811002
	D455	Diode	5302681002
	D457	Diode	5301811002
	D461	Diode	4H13031607
	D465	Diode	4H13031607
	D467	Diode	5302591001
	D468	Diode	5302601002

	Ref.	Description	Part No.
	SEMICONDUCTORS (Continued)		
	D484	Diode	5391500450
	D571	Diode	5301811002
	D572	Diode	5301811002
	D573	Diode	5301811002
	D592	Diode	5301811002
	D593	Diode	5301811002
	D597	Diode	5301811002
	D601	Diode	5301811002
	D602	Diode	5301811002
	D603	Diode	5301811002
	D604	Diode	5301811002
	D605	Diode	5301811002
	D714	Diode	5302681002
	D715	Diode	5302681002
	D716	Diode	5302681002
MISCELLANEOUS			
S	L101	Fuse, 3A	1813900214
S		Fuse Holder (2 used)	1035300932
S	B100	CRT w/Deflection Yoke (CM8505/CM8705)	A34EAJ00X
S	B100	CRT w/Deflection Yoke (8CM505)	A34EAJ10X
S	B100	CRT w/Deflection Yoke (8CM515)	M34EAQ00X
S	B100	CRT w/Deflection Yoke (8CM542/8CM643)	E2971B55
S	B100	CRT w/Deflection Yoke (CM8562/CM8762)	M34EAQ10X
S		CRT Socket	1892250011
	S323	Speaker	5808350051
	1567	Crystal	5699000028
		RCA Jack (2 used)	1813930160
		6 Pin DIN Socket (CM8505/CM8705/8CM505/8CM515/8CM643)	1814521073
		8 Pin DIN Socket	1814521072
		Cabinet (CM8505)	1492100002
		Cabinet (8CM505)	1492100003
		Cabinet (8CM515, 8CM643)	1492100004
		Cabinet (8CM542)	1492900004
		Cabinet (CM8562)	1492100005

Ref.	Description	Part No.
	MISCELLANEOUS (Continued)	
	Cabinet Foot, 4 used (CM8505/CM8562)	1491030002
	Cabinet Foot, 4 used (8CM505/8CM515/8CM643)	1491030003
	Cover Adjustment (8CM542)	1491320214
	Secondary Control Door (CM8505)	1492180011
	Secondary Control Door (8CM505)	1492180010
	Secondary Control Door (8CM515/8CM643)	1492180012
	Secondary Control Door (CM8562)	1492180018
	Text Plate (CM8505/CM8562)	1591060003
	Text Plate (8CM505/8CM515)	1591060004
	On/Off Pushbutton Knob (CM8505/CM8705)	1494200066
	On/Off Pushbutton Knob (8CM505/8CM515/8CM643)	1494200074
	On/Off Pushbutton Knob (CM8562/CM8762/8CM542)	1494200074
	Pushbutton Knob (VCR SW., Comb Defeat (2 used)	1494200067
	Pushbutton Knob (RGB/CVBS, Green (2 used)	1494200068
	High Voltage Cable (CM8505/CM8705/8CM505/8CM515/8CM643)	4613990214
	High Voltage Cable (CM8562/CM8762/8CM542)	4613990221
	Focus Cable	4613990213
	Control Extender Rod (4 used)	1191000039
	Owner's Manual (CM8505)	IB47290001
	Owner's Manual (8CM505)	IB47540001
	Owner's Manual (8CM515)	IB47550001
	Owner's Manual (8CM643)	IB50090001
	Owner's Manual (CM8705)	IB53160001
	Owner's Manual (CM8762)	IB53150001
	Owner's Manual (CM8562)	IB48180001
	Owner's Manual (8CM542)	IB52560001

NAPCEC SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock Hazard

1. Be sure all components are positioned in such as way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired receiver unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed according to the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with an S by the Ref. No. in the parts list and enclosed within a broken line* along with the safety symbol ⚠ on the schematics. Replacement parts without the same safety characteristics may create shock, fire or other hazards.
7. When servicing any receiver, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many receivers use a polarized line cord (one wide pin on the plug). Defeating this safety device may create a potential hazard to the servicer and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After re-assembly of the set, always perform an ac leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also, check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc. to be sure the set is safe to operate without danger of electrical shock.

* Broken line: ▬▬ • ▬▬ • ▬▬ • ▬▬ •

Implosion

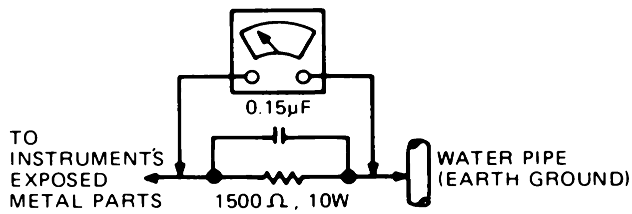
1. All picture tubes used in current model receivers are equipped with an integral implosion system.
   Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes as specified by the manufacturer.

X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the HV at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has available at all times an accurate HV meter. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an X-radiation problem. High voltage should always be kept at the manufacturer's rated value — no higher — for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV does not exceed the specified value and that it is regulated correctly.
   We suggest that you and your service technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine be clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV reading be recorded on each customers' invoice, which will demonstrate a proper concern for the customers' safety
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.
6. New type picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.



Leakage Current Hot Check

1. Do not use an isolation transformer for this test. Plug the completely re-assembled receiver directly into the ac outlet.
2. Connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15uF. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohms/volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a measurement is outside the limits specified, there is a possibility of shock hazard. The receiver should be repaired and re-checked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement

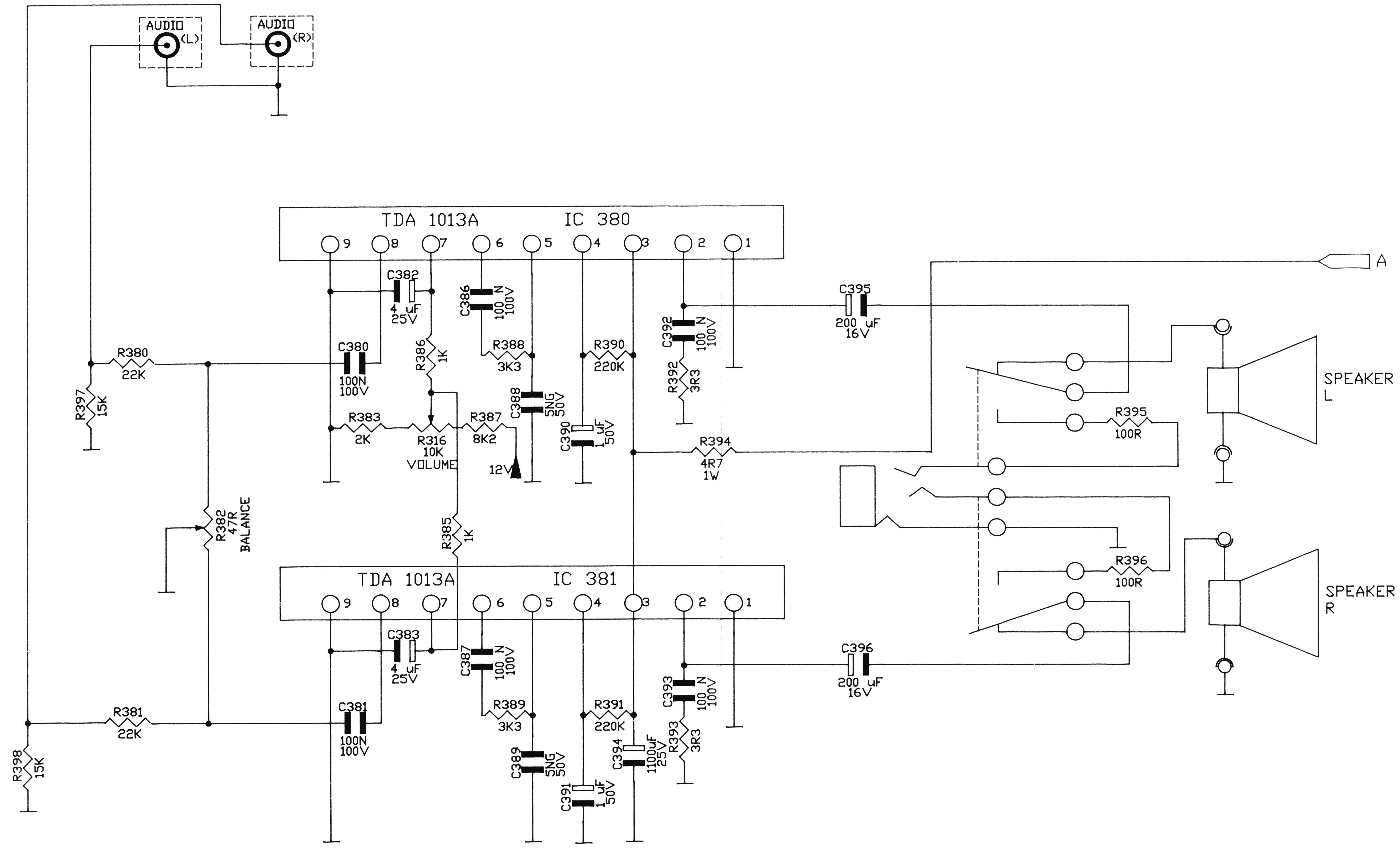
The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or an N.A.P. Consumer Electronics Corp. (NAPCEC) approved type.

Parts Replacement

Many electrical and mechanical parts in NAPCEC television sets have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the NAPCEC recommended replacement part shown in this service manual may create shock, fire or other hazards.

COMMODORE STOCKED PARTS — 1084P

CBM PART NUMBER	DESCRIPTION	LOCATION	PHILIPS OEM NUMBER
314890-01	SERVICE MANUAL 1084		
314851-01	CABLE 1084 (6 to 23)		
610200-11	LINE CHOKE	S102	3693400001
610200-12	DEGAUSSING COIL	S104	3693100005
610200-13	DEFLECTION YOKE (PART OF CRT)	S348	—
610200-14	TRANSFORMER	T101	3090200003
610200-15	HORZ DRIVE TRANSFORMER	T401	3293000001
610200-16	OUTPUT TRANSFORMER	T402	3291000006
610200-17	CAP .0082 μF, 1.5KV POLY FILM	C467	2602320549
610200-18	CAP .022 μF, 400V POLYPROP	C468	2602320597
610200-19	DUAL PTC	R104	4H11640035
610200-20	FOCUS CONTROL, 59M	R732	2204290730
610200-21	POWER SWITCH	SK1	1606780548
610200-22	IC OPTIC COUPLER	IC101	5303110001
610200-23	IC AUDIO AMP	IC301	6123300289
610200-24	IC VERT SIGNAL PROCESSOR	IC302	6123300289
610200-25	IC HORZ SIGNAL PROCESSOR	IC402	6123300330
610200-26	IC VIDEO PROCESSOR (28 PIN)	IC501	6123300332
610200-27	IC VIDEO AMP	IC502	6192080240
610200-28	TRANSISTOR NPN TS461	TS461	6105350003
610200-29	TRANSISTOR NPN TS467	TS467	6104330001
610200-30	TRANSISTOR NPN TS711, 712, 713	TS711	6104390001
610200-31	DIODE D107, 108, 109, 110	D107	5391200341
610200-32	CRT WITH DEFLECTION YOKE	B100	M34EAQ10X
610200-33	CRT SOCKET	—	1892250011
610200-34	CABINET (CM8562)	—	1492100005
610200-35	CONTROL PANEL DOOR	—	1492180018



1084 P-S
SCHEMATIC

commodore
COMPUTERS

Computer Systems Division
1200 Wilson Drive
West Chester, PA 19380

COMMODORE STOCKED PARTS - 1084S-P

CBM PART NUMBER	DESCRIPTION	LOCATION	PHILIPS OEM NUMBER
314890-01	SERVICE MANUAL 1084S-P		
314851-01	CABLE 1084 (6 TO 23)		
602200-60	LINE CHOKE	S102	4822 157 52228
602200-25	COIL, DEGAUSSING	S104	4822 157 52274
602200-59	TRANSFORMER POWER	T101	4822 142 60379
602201-85	TRANSFORMER HORZ DRIVE	T401	4822 146 21263
602201-86**	TRANSFORMER OUTPUT	T402	4822 140 10349
602201-31	CAP .0082 uF, 1.5KV POLY FILM	C467	4822 121 43061
602201-32	CAP .022 uF, 400V POLYPROP	C468	4822 121 20237
602200-53	RES P.T.C. DUAL	R104	4822 116 40035
602200-95	POTM, 59M FOCUS CONTROL	R732	4822 101 20821
602200-28	SWITCH, POWER	SK1	4822 276 11501
602200-76	IC OPTIC COUPLER CNX62	IC101	4822 130 90121
602202-10	IC AUDIO AMP TDA 2611AQ	IC301	4822 209 80444
602202-11	IC VERT SIG TDA2653A	IC302	5322 209 82945
602202-14	IC HORZ SIG TDA2595/V4 16P	IC401	4822 209 72155
602202-22	IC VIDEO TDA 4570 28P	IC501	4822 209 71398
602202-23	IC VIDEO AMP TDA3505	IC502	4822 209 71971
602202-18	TRANSISTOR NPN BC639	TS461	4822 130 41053
602201-00	TRANSISTOR BF869	TS711	4822 130 41773
602200-64	DIODE GP15J	D107	4822 130 33887
602200-22	CRT	B100	4822 131 20149
602200-85	CRT SOCKET		4822 255 70217
602200-03	CABINET (CM8562)		4822 701 10567
602200-06	COVER CONTROL PANEL DOOR		4822 701 10568

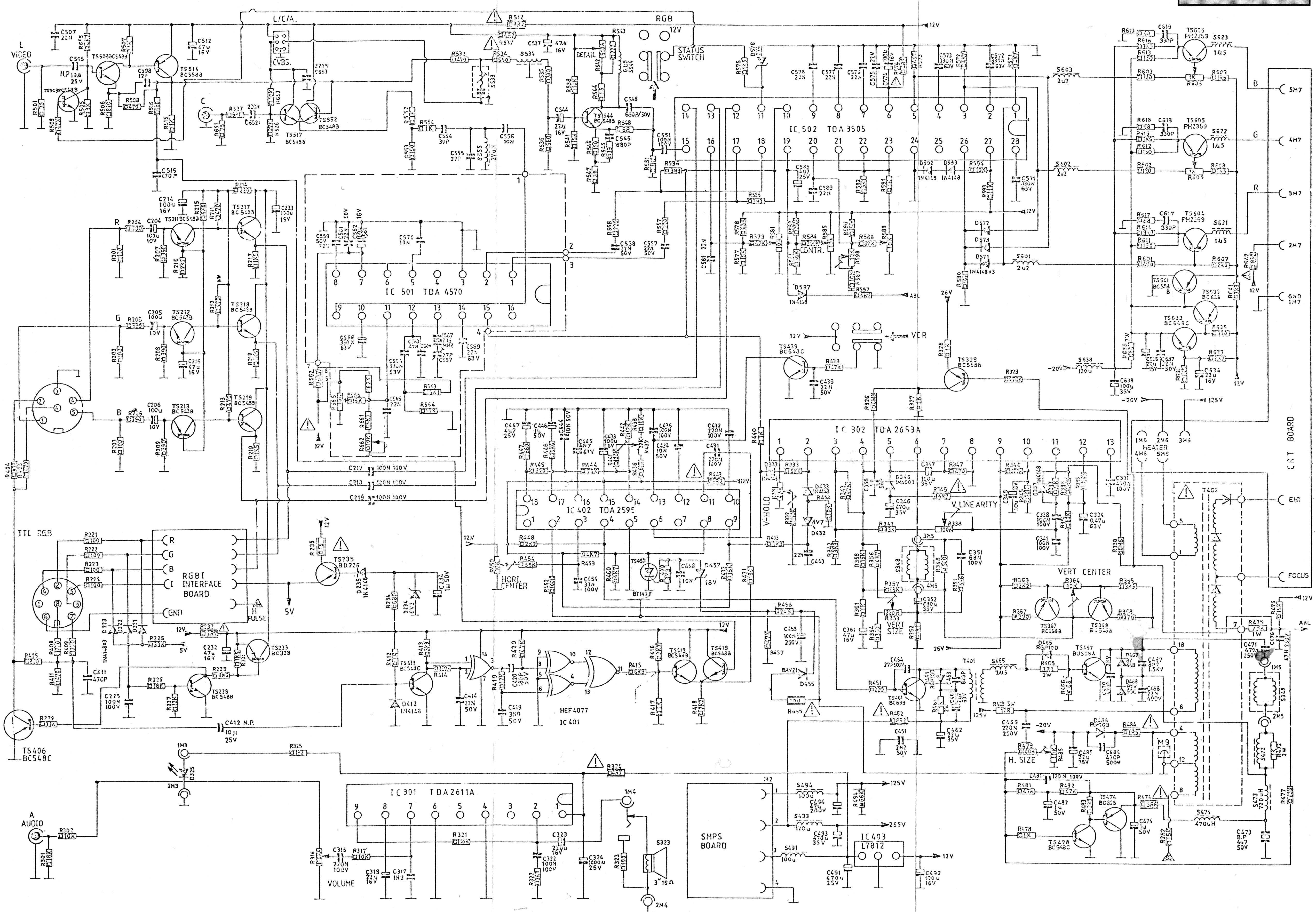
** T402 USED IN UNITS MANUFACTURED PRIOR TO JUNE 1988.

T402 FOR UNITS MANUFACTURED AFTER JUNE 1988 USE OEM PART NUMBER 3138 138 30100 (HAVE FOCUS CONTROL AND BRIGHTNESS MOUNTED) ARE AVAILABLE IN 1084S-P REPAIR KIT, CBM PN# 314891-01.

314891-01 KIT, 1084S-P REPAIR

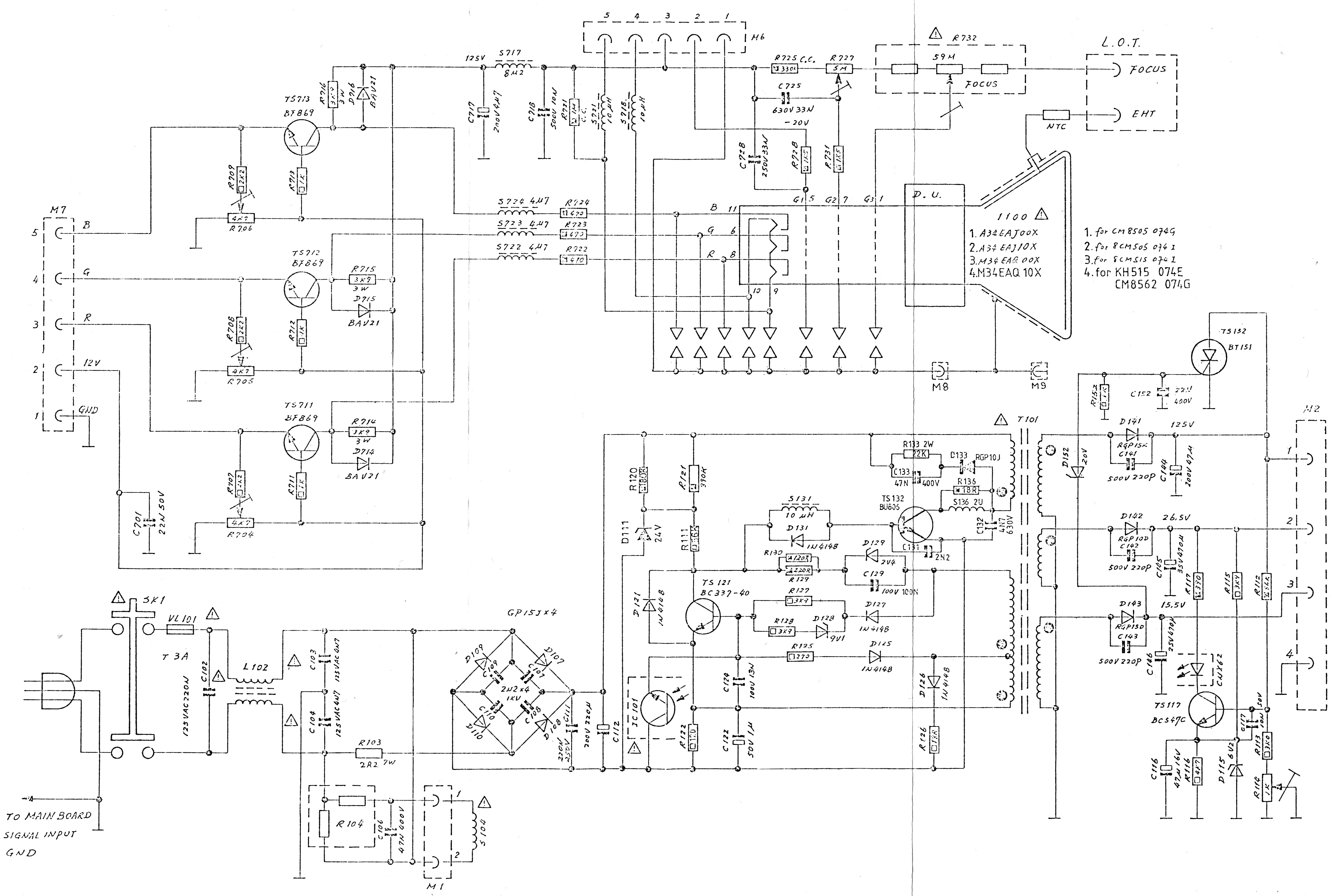
INCLUDES:

CBM PART NUMBER	DESCRIPTION	LOCATION	PHILIPS OEM NUMBER
314892-01	OUTPUT TRANSFORMER	T402	3138 138 30100
314893-01	RESISTOR 15K, 2W	R475	2120 105 90C63
314894-01	CAP .047 uF MYLAR	C476	2222 368 45473
314895-01	WIRE PVC ORG, 24 AWG	-	0722 183 00004
314896-01	CAP .0056 uF, 50V CERAMIC	C356	2020 552 90817
314897-01	CAP .022uF, 50V CERAMIC	C561	2020 550 90526
314898-01	INSTRUCTIONS		



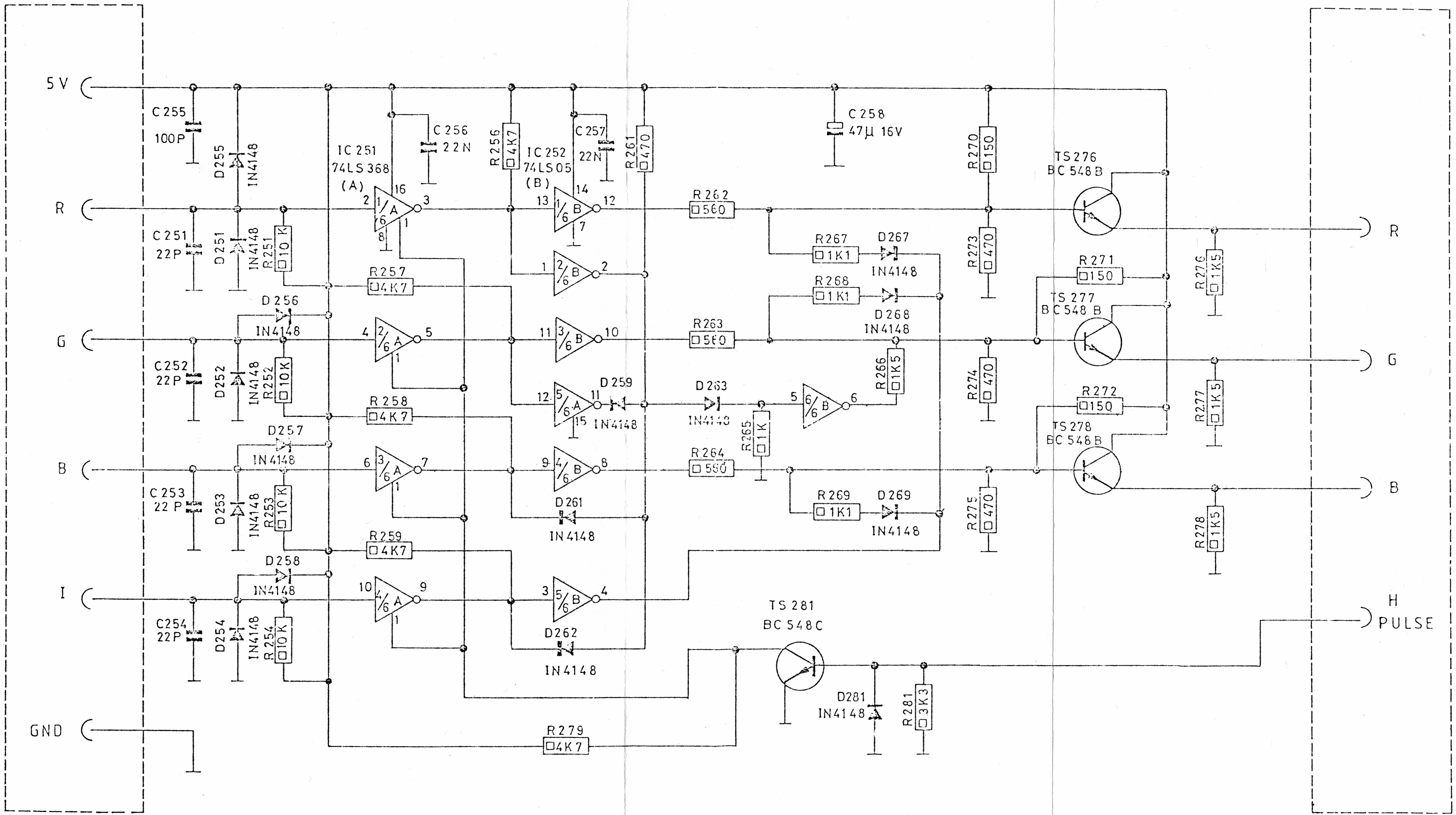
1084 Monitor
OEM — Philips Schematics
Sheet 1 of 3

FOR REFERENCE ONLY



FOR REFERENCE ONLY

1084 Monitor
OEM — Philips Schematics
Sheet 2 of 3



FOR REFERENCE ONLY

1084 Monitor
OEM — Philips Schematics
Sheet 3 of 3